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The Designs for the Meat and Poultry Market, Smithfield.

IN September last, the Corporation of the City of London advertised for designs for the Metropolitan Meat and Poultry Market, proposed to be erected at Smithfield on a plot of ground, measuring 625 ft. by 240 ft., which is intersected by the line of the Metropolitan Railway extension from Farringdon-road. Premiums, one of 300*l.* and one of 200*l.*, were offered to the authors of two designs that might be selected. These premiums were to entitle the City to the copyright, but without any engagement on the part of the Corporation to carry out either of the designs, or to employ either of the authors in the execution of the works. The designs received have been exhibited at Guildhall, during a fortnight; but it does not seem to have been considered necessary that we should be informed of the fact.

The result to the Corporation, from the expenditure of 500*l.* in premiums, will hardly be the possession of a design that can be carried into execution. Only seven designs were sent in; and of these, two or three afford scarcely a suggestion in any matter of the arrangement or construction, and are indeed not to be considered as matured productions. The remainder of the designs, even, cannot be accepted as supplying a solution of the problem,—not a difficult one, comparatively, — of a meat-market; though amongst them, one design at least has merit decoratively, and in a high degree. We think that the slight response to the offer of premiums must be taken as evidence additional to what we have noted of late, that competitions, at least those which are "unlimited," are becoming viewed with disfavour, as means of professional success. It is true that, in this case, there was no reason for an architect who might receive a premium to expect he would derive much further advantage, and that always the chance of benefit beyond a premium has been rated higher than it should be: it is however satisfactory to us to be able to believe that our professional brethren are beginning to see, not the general miscalculation on their own part, and on that of public bodies, promoters of competitions,—the question of which we do not care to argue,—but the necessity for stipulations to secure to themselves some advantage, as for example that which might be derived even by competitors not successful in gaining premiums, through an exhibition, managed as we have often explained, but as we have scarcely yet witnessed.

The seven designs submitted to the Corporation of the City, in answer to the advertisement, have, owing to their small number,—but, to that circumstance alone,—been tolerably well seen by those who could procure cards of admission. One of the two rooms over the Comptroller's Office, where the designs were hung, is badly lighted; little publicity was given to the exhibition; and the motto-system being adopted, a last chance of benefit to the majority of competitors was denied them. Credit must be given to those who managed the competition, for having worded the "Instructions" so as to leave scope for suggestions, and also for having printed the competitors' particulars of their designs. The "Instructions," of necessity, stipulated for attention to certain conditions, chiefly arising from the relative positions or levels of the intended market and the railway. The shops and avenues, and the general structure of the market,—the floor-line to be 3 in. above the paving surrounding the building, or 54·11 above Trinity datum,—will have the railway as a basement; and openings will be left in the flooring of the market, at about a dozen points, already fixed,—and that very irregularly as to the whole area,—for the hoists required for raising the meat from the railway, for the ventilation of the railway, and for stairs for the passenger-traffic connected with the market. The "Instructions" also directed that a central roadway, 50 ft. in width, from north to south, that is on the transverse axis of the ground, covered over, should be preserved. One-sixth of the total area was to be reserved for the poultry-market. The markets and roadway were to be well lighted, and protected from the sun. No part of the main building was to be less in height than 30 ft.; and provision was to be made for flushing, for heating the shops, and for some other requirements. Cement and soft stone were to be avoided.

It is curious that whilst one or two of the competitors refer to the Halles Centrales of Paris, none of them appear to have noted the exact features of those structures, unless for the purpose of a deviation and on the hypothesis that there is a difference, greater than in fact exists, between the climate of London and that of Paris. As to humidity, and clearness of the atmosphere, there is great difference; but as to heat and cold alone, there is none that needs much attention; and the precedent of the Paris markets may be fairly taken without deduction or modification. It so happens that the first-built *pavillon* of the Paris markets, was for the meat-salesmen; and that, there, a structure with solid walls, and considerable decoration in masonry, was found quite unsuitable,—so that it has since been removed. Now, the new *pavillons*, though not all for butchers' meat with poultry, are little more than sheds, connected with wide roadways and avenues that are roofed over at sufficient height to allow of clerestories; but the whole external enclosure of the market, or *pavillon*, is constructed with a large area of louvres or other provision for ventilation. Skylights, and glass generally, are eschewed.

Ventilation and the avoidance of direct sunlight have been regarded as important, by the authors of the best of the designs for the City Meat Market; but ventilation, at least, in each of the designs to which more especially we refer, does not seem to have been adequately provided for. Besides the provision of louvres in the clerestory of an avenue, that of apertures for admission of air through the lower portion of the outer enclosure of the market, should be considered,—and we are not undervaluing space already given in different entrances, some of them wide, closed only with iron gates; whilst the adoption of skylights, or the Crystal Palace system, in some of the designs, may be undesirable, even allowing that direct rays of the sun would not fall on the meat. It has been said that the best arrangement for a market is as little as possible removed from that of stalls in the streets, though there there might be inadequate provision against frost; but we apprehend that the arrangement for a meat-market, should approach rather to that of the old shambles, than to that of the central avenue of Covent Garden Market, which, with or without the addition of skylights, seems to have been the model of more than one of the designs. There is, however, room for discussion as to some of the principles to be laid down for the arrangement of meat and fish markets,—as for that of many other descriptions of buildings, to the principles of planning of which attention is being given just now, and seemingly for the first time. The salesmen are by no means agreed, unless as to disadvantages of structures such as the building in Warwick-lane, once the old College of Physicians, where there is little or no means for admission of air in the lower portion of the walls. Yet the subject cannot present one tithe of the difficulty that there is in the planning of an ordinary house. In the Paris markets there is a vast area below-ground for storage, and furnished with tramways. Like storage for the London Meat Market does not seem to be necessary or desirable, the position of the railway being taken into account, and rapid sale being calculated upon. Ventilation would be difficult in a basement. The competitors' plans, and the plan of the ground, are deficient of information on main points of the connexion of the railway and the market. The latter plan just indicates the apertures for hoists, a staircase, and the centre lines of columns of the basement. Generally the designs do not show that the subject has received the amount of study that was required.

The set of drawings, No. 1, marked with a key, includes in fact two alternative designs, the difference being chiefly in the arrangement of the shops, and by the omission, in one design, of certain features in the 50-ft. transverse roadway, and its entrances, which might obstruct to some extent the access and circulation of air. The principal design has a central avenue of 20 ft. wide, on the longitudinal axis of the ground, and connected with the 50-ft. roadway. Parallel with this avenue are two others of 15 ft. These three avenues are lined by the shops, which are arranged in groups of four or six. The groups are separated, and the longitudinal avenues connected, by transverse passages, which however would be apportioned with the shops and kept private. All these passages, public or private, are carried up with clerestories above the level of the roofing of the shops; and their ends form features of effect in the elevations. The entrances to the central transverse roadway have each a great arch beneath a pediment, the lunette-head, or tympanum, of the arch being filled with sculpture. The whole of this central feature is very effectively composed; as indeed are also the features of the wings of the north or south front, and those of the east and west fronts, some of which we have referred to. The character of style resembles the German, or rather the recent French, version of Greco-Italian, of which we have often had occasion to speak as adopted in Paris, more especially for the buildings designed by the architects of the municipality. At the intersection of the 20-ft. avenue with the 50-ft. roadway, a tower in several stages is proposed as the central feature of the building; and the grouping of the whole, as shown in a well-drawn perspective view, is very clever. But the tower is proposed to be carried on sixteen points, or four at each of the four angles, each pier of the sixteen being intended to be 2 ft. 6 in. square on plan, and some of the piers having to carry the ends of girders of 35 ft. span. The girders would support the floor of the chief refreshment-room, intended to be at an upper level here, over the portion of roadway. The clerestories throughout, are proposed to be furnished with louvres,—these to be of glass; and the slopes of the roofs would be glazed. The shops would be generally 30 ft. in height, with a flat roof-covering; but the full height, internally, is given to the shop only in one-half of its area, the other half having an upper-story room. The number of shops required by the "Instructions" was 200 or thereabouts:

the number provided by the author of the design before us is 186; though in his second design it is 200. The shops next the street would open thereto, and be protected by pent-house roofing covered with ornamental tiles. This feature, continued round the building in the middle of the height, adds to the good decorative character of the whole, already spoken of. The dimensions proposed for the shops of the group of four, are 23 ft. 6 in. by 22 ft. 10 in. The arrangements for ventilation, as of the railway, are alluded to by the author; but they are not clearly shown. The roofing would be supported on iron columns built into the 9-inch brickwork which forms the divisions of the shops, the columns being intended to act both as soil-pipes, and pipes for the rain-water. The sun would be excluded from the avenues by blinds made to travel horizontally, or beneath the glass-roofing. The estimated cost of this design is 100,000*l*.

The author of the design, No. 2, marked "For the Use of the Citizen, and Decoration of the City," considers that whilst the Halles Centrales are "admirably adapted by their lightness and openness for the mild climate of France, they are inapplicable, if exactly reproduced, to the cold and variable climate of England," and that a meat-market "to be erected in this climate, should be of a substantial character," so as to keep out "the extremes of heat and cold," but that advantage should be taken of modern improvements connected with iron and glass, to give "lightness and airiness," "and to reduce the points of support to the minimum, a matter of the utmost importance in an erection of this nature." This is something like the original Paxtonian notion, that iron and glass would supersede all other materials, wherein no thought was given to the defects of iron columns for strength, and to the claims of masonry or brickwork, and of vaulting, or of ceiled roofing, to consideration, as favouring an equability of temperature. The chief provision for this last, in the design which is before us, consists in an external space, 15 ft. in width, on the north and south, throughout nearly the whole length, to be occupied by shops and offices over them, and serving to inclose the market and protect it, as supposed, from the extreme cold on the north, and from the sun on the south. The east and west ends of the market would be left almost open, the chief features of those ends being three large arches, wholly or in great part filled in with iron-work. The elevations there, by the crowning mouldings, carry out the idea of an ordinary low-pitch central roof and side lean-to roofs; but the market itself is roofed over in three similar spans with curved principals of wrought and riveted iron. These principals are carried by piers which are formed of a group of four shafts around a central square column, the shafts being ornamented by spiral flating, and a lozenge pattern. These piers also carry arches for the support of the cornice-lines and the two gutters between the roofs. The centre span would be 90 ft. in width, and the same in height; the others would be 60 ft. Whereas in the first-noticed design, the bulk of the area was appropriated to shops, with private ways, it is here given to the avenues. The shops are arranged in continuous lines, interrupted only by two transverse avenues, the greater number of the shops being about 15 ft. square. A tramway across the centre of each wing of the building, is proposed, with gates at the ends, north and south; so that the central 50-ft. way could be left free for street-traffic. The decorative character of the building may be described as Italian. The flanks exhibit a range of small arches and shafts, with brickwork-diapering below, a division into bays by square piers, and towers to the centre of the front. The light is admitted through the roofs, along the centre, except in one roof, where the opening is placed in the side-slope away from the direct rays of the sun. The centre, or "nave," has a clerestory, the louvres to which are glass on the north side, and iron on the south. The walls of the aisles rise above the external building, north and south, and have also louvres, in one case glass and the other iron. The semi-circular opening at the west end of the building is proposed to be glazed with ground glass. In general character, though not in detail, the design differs little internally, from many recent productions. There is some decorative effect in all these works; but there is not the picturesque effect noticeable in some very simple timber-roofed structures,—for example, St. John's Market, Liverpool. The cost of design No. 2 is estimated at 150,000*l*.

We are looking at the designs in the order in which they have been arranged and numbered, which often in competitions has some reference to an idea entertained of merits. The author of the design, No. 3, marked "Citizen Stationer," has prepared much the largest number of drawings, and otherwise has taken considerable pains with the subject. He claims to have studied, besides other points, the rental to be received from shops; and of these his plan would afford 214 in number. The ground on each side of the covered 50-ft. central transverse roadway is divided by two longitudinal avenues and one transverse avenue, each being 30 ft. in width, except for the Poultry Market, and 32 ft. in height. The avenue is divided down the centre by a row of iron columns, not for the support of the roof, but to carry hooks for meat. Louvres are inserted in the roof, and the author claims to have taken care to avoid heat from the direct rays of the sun. He provides, however, domes of iron and glass, at the intersections of the avenues, but open at the top. This arrangement he thinks, will conduce to ventilation. The shops vary from 30 ft. by 20 ft. in the market for meat, to 16 ft. by 15 ft. in that for poultry. The divisions are of enamelled slate let into grooves. Four shafts are specially provided for ventilation of the railway. There are upper rooms attached to the shops; and these receive direct ventilation from the open air. The lavatories, closets, and urinals are connected with the shafts before referred to. The decorative treatment of the design, Italian in character, is inferior to that in the design first noticed. The estimate is 122,000*l*.

No. 4, "Semper Paratus," calls for little remark except as to its differing from other designs, by giving the greater height of roofing to the area over the shops, and the less to the passages.

No. 5, "Invicta," not sufficiently explained, has the Crystal Palace character, but provides open areas ventilating the backs of shops in a block, and in which the closets and urinals are placed. A tramway leads from the hoists, to the back of every shop.

No. 6, "Fortuna Sequatur," is an unfinished set of drawings. The best features of the design are decorative; but they are not consistent with the expression, or altogether with use, of a market. A screen wall with an order of three-quarter columns, and enriched doorcases, are what they mainly consist of.

The design, No. 7, "Spero," we can hardly do justice to; for, it is shown by tracings which are hung in a bad light. The author suggests a description of carriage, for the tramway, by the use of which turn-tables would be unnecessary.

Some of the competitors have materially damaged their plans by placing iron columns in avenues where they would be exposed to shocks not favourable to the endurance of the structure. There are hints to be gathered from nearly every one of the designs; but it can hardly be said that the Corporation have gained what was expected, or that the question of the arrangement and construction of meat-markets has been much advanced.

PROFESSOR SMIRKE'S OPENING LECTURE ON ARCHITECTURE: ROYAL ACADEMY.

ON a former occasion, in this place, I dwelt on the paramount importance to an architect of the study of general composition of his designs; and I expressed the opinion that however admirably executed the details may be, however gracefully the subordinate and smaller parts of a design may be treated, if the general outlines of the building are unsatisfactory, it will surely fail to please the educated eye. I told you of instances of the impressive effect produced by the flimsiest and rudest constructions—works, perhaps, composed of mere scaffold-poles and tarpaulins, owing to a judicious and artful arrangement of lights and shadows, and to the general proportions of the various masses. We might look around us and not be at a loss to find instances where a superabundance of swaggs and scrolls, and other like objects of minute decoration, display an excessive attention to details, to the total neglect of the far more important consideration of the *general composition of the design*. I will not deny that I am the more disposed to repeat this warning, because the very least observant of us must perceive that this inordinate and too exclusive elaboration of details is one of the vicious tendencies of the present day. We are prone to run into the error of supposing that, be the outline of our masses ever so tame, ever so deficient in symmetry, we shall yet not fail to secure admiration if the surface of our work be covered with intricate enrichment, so as to captivate the eye with a sumptuous display of elegant friezes and delicate embroidery.

Such were the warnings which I deemed it my duty to address to you on a former occasion; but in doing so let me not be so misunderstood as to be supposed to have encouraged carelessness or inattention to those minor objects of ornamental design which, whilst we deprecate the habit of attaching too much importance to such superficial details, are, nevertheless, the source of real beauty and pleasure when used with moderation and judgment. It appears to me, indeed, of so great importance that these lesser matters of art should not be disregarded, that I purpose to devote this evening wholly to the consideration of them.

I believe that the best teachers of the sister-arts, whether their teachings be written, or conveyed by the still more impressive mode of example, and by their own actual practice,—we shall find whilst they have of course paid their first and deepest attention to general composition, and to the great elements of beauty of style, yet have never permitted themselves to forego a due attention to the execution of details.

It is always with very great diffidence that I venture to allude to the sister-arts, but I feel sure that I am justified in saying that the greatest masters of painting, such as Michel-angelo and Correggio, whose genius was especially conspicuous in their grandeur of conception and greatness of manner, never slighted their smallest details, never laid themselves open to the comments of criticism on this score, by showing any want of thought or care in those minor matters, which more slovenly or less competent painters might fancy to be beneath their attention.

Raffaelle, in an especial manner, illustrates this truth. Remarkable as he was for all the loftiest qualities of artistic genius, he never failed to pay delicate attention to his accessories, and to the careful painting of all his details. It was the remark of one of our former presidents, Sir T. Lawrence, when enthusiastically recording his admiration of Sir Joshua Reynolds, that delicacy of finish and careful imitation as much distinguished his works as that noble breadth and largeness of style which placed him at the summit of his art in this country. And again, when adverting to Michelangelo, he said that "whilst the ceiling of the Sistine Chapel was wonderful for its unequalled breadth and for loftiest conception, and might be regarded as the noblest work ever yet projected, yet even the miniatures of Julio Clovio were not more highly finished than some of the studies of the great master."

Again, with great deference to my better informed colleagues who cultivate the art of *sculpture*, I would venture to say that *there* also the best sculptors have ever shown a scrupulous regard to the subordinate portions of their work. It has often been deplored by the warmest admirers of that truly great genius, Flaxman, that he should have dimmed the lustre of his works by a too frequent disregard of finish.

If we look back to the brilliant era of ancient sculpture few things present themselves more calculated to excite our surprise and admiration than the surpassing excellence of their details. The horses in Phideas's friezes are not only wonderful for the spirit and truth of their design, but we shall find on examination that the sculptor has with loving and lavish hand thrown art into the minutest details—the representation of the veins and the delicate execution of the manes and tails. Although the work was destined to be placed upwards of 60 ft. or 70 ft. from the eye, yet these extraordinary men loved their work too well to admit of their leaving unfinished or unconsidered these small matters, although they must have been well aware that no eye could appreciate them when raised to the position assigned to them in the main work.

I have dwelt long enough on the evidences of the value attached by the highest authorities to a careful attention to detail in the cognate branches of art; but certainly to no branch of art does the observation apply more forcibly than to that which engages our attention this evening. The works of the architect are usually on a far larger scale, and therefore subordinate parts may not unfrequently derive even undue importance from their size and unavoidable con-

spicuousness. In our art the high quality of grandeur is more dependent on actual magnitude than is the case in the sister arts. The architect may even be able to win applause by the forcible effect obtained from mere bulk and extent. Yet still our art has this in common with the sister arts, that whatever praise a building may obtain by reason of its meritorious proportions, or of the grandeur of its general effect, those merits are so greatly increased, and the pleasure derived by the critical eye is so materially enhanced by the discovery of those smaller beauties of design that are revealed only by a close and critical examination of the subordinate parts, that we can never venture to be indifferent to the value of such details.

Now, it would be easy to show to you that such has been the opinion of most men of great artistic genius at all periods. The same niceties that I have been adverting to as forming one of the great charms of Greek sculpture, are equally observable in the *chefs-d'œuvre* of Greek architecture that have survived for our study and instruction. Perhaps it would be difficult to cite a more remarkable instance than the entasis of the shaft of a Greek column. It was found that, owing to some optical illusion, the shaft of a pillar of which the sides are parallel appears to be larger at top than at bottom, and such appears to be the case in the remarkable Egyptian example at Beni Hassan, which has often been referred to as the prototype of the Doric order. To remedy this defect, the Doric architects diminished their shafts upwards of about 1-5th of their bottom diameter. But then, owing to some other optical illusion, it was found that where the sides of the shaft were diminished in straight lines from the bottom to the top, those sides *appeared* to be slightly concave: this gave rise to the adoption of what is called by Vitruvius the entasis, by which expedient this disagreeable *deceptio visus* was at once obviated. This has always been known, but it has quite recently been found that even this expedient was not sufficient fully to satisfy the excessive refinement of the Greek eye, and that the boundary line of the Doric shaft, in the best examples, was made not merely a convex line, but a part of a true hyperbolic curve, a hyperbola, no doubt, of an extremely small axis minor, but, nevertheless, a hyperbola drawn with exact mathematical accuracy. Many of you are probably well aware that, although this fact had been previously surmised by others, the ascertainment of the truth with precision has been the result of the very careful observations and measurements of Mr. Penrose, made under the auspices of the Dilettante Society. Here is an instance of the extreme delicacy and fastidiousness of Greek taste, and an evidence of the value attached by the Greeks to what probably appears to most of us to be a very trifling matter. We may, however, learn to set a higher value on a rigorous attention to such trifles, when we contemplate the mischievous results of a neglect of them. The later imitators of the Classic style *saw* this entasis, but, being utterly unable to feel as the Greeks felt, they presumed that all they had to do was to swell the shaft, and so they swelled it, but to such a preposterous extent that, as Evelyn quaintly observes, their columns appear to be sick of a tympany.

A similar evidence of nicety of taste is presented to us in the mathematical precision with which the Greek echinus is carved. The artists of that wonderful period were not content with an ordinary and simple curve, which might have satisfied a less sensitive taste, commencing the contour with a straight line and gradually giving the upper part of it a curvilinear form resembling that of the natural echinus. But the careful measurements of Mr. Penrose prove the curvature of the Athenian echinus to be strictly and exactly hyperbolic, as the Greek sculptor felt that his curve should be.

Now I would call your attention to another instance of the really wonderful delicacy of the Greek eye. Most students who have looked over the pages of the earliest expounder of the laws of architecture,—Vitruvius, will have been sadly perplexed by the instructions given to us by him touching the "*Scamilli impares*" in a Greek order. Much as the question has been vexed, I do not know that any expounder of the text ever satisfactorily explained or ascertained the exact meaning of those words by the aid of the plumb and level, until Mr. Penrose did so, when engaged on the minutely critical examination of Athenian remains, made by direction of the Dilettante Society. That most careful observer has shown us that the course of masonry forming the base line on which the columns of a Doric portico were placed, was studiously laid with its upper surface very slightly but appreciably convex; and though Vitruvius, on laying down this rule, does not give us the reason for it, yet there can be no doubt whatever that, like the other minute observances of the Greek masons to which I have adverted, the "Scamilli impares" which were the result of this very peculiar mode of construction, were intended to correct an optical illusion similar to that which the entasis of the column shaft was intended to correct;—thus furnishing another illustration of the extreme fastidiousness of these accomplished art-workmen. It is in like manner shown by the measurements of Mr. Penrose that the soffite of the entablature is executed with a very faint concavity. We can well understand the motive for this. Every one will have observed, that through some visual deception any large surface of flat ceiling appears depressed towards the centre:—such an effect on the eye was sure not to have escaped the observation of Greek builders, who adopted this natural mode of correction.

I am tempted to add one other illustration. On a former occasion I pointed out to you a slight, but very delicate instance of that fastidiousness to which I have been adverting, in the faint concavity which was wont to be given sometimes to the facettes of a Doric triglyph. The motive for this concavity may readily be surmised to be a wish to render the drawing of those triglyphs distinctly perceptible, without resorting to too deep or sharp indentations, which might by their shadows have interfered with the effect of the sculptured metopes, and detracted in some degree from the *breadth of effect*, that quality which is one of the distinctive charms of all Greek art.

Perhaps there is no lesson which those artists inculcate by their example more emphatically than that manifest love of their art for its own sake which constantly led them to take what ordinary minds might have considered *superfluous* trouble. The same unsparing prodigality of labour which they showed in giving to the unseen back of their pedimental statues as high a finish as the front, and the same scrupulous attention to truth in the anatomical minutiæ of their bas-reliefs, however remote from the eye, to which I have already adverted;—that same feeling extended even to the subordinate details of their masonry,—to the gargoyles in the crowning cyma of their cornices, and to the antefixæ on the eaves of their roofs,—interesting instances of which we possess in the British Museum.

We will now pass *over* the Roman period, which was but the dim sunset of art, and hurrying past the still dark shades that followed that period, we will seek illustration in the best period of Mediæval art. We shall there find, that if the more refined æsthetic niceties may be wanting, there yet existed, without doubt, a high appreciation of the value of a careful attention to details.

The mouldings of the thirteenth century are of themselves sufficient evidence of the strong artistic feeling that pervaded our art at that period. While a forcible effect was studiously sought by deep undercuttings, and by a brilliant sharpness of execution, the best Mediæval artists never lost sight of the value of that breadth which had been, as I have said, the peculiar merit of Greek mouldings. Their mouldings were massed together in groups kept forcibly distinct, but deep, undercut hollows, producing powerful lines of shadow.

The custom prevalent in the thirteenth century of banding the shafts of columns is another evidence of nicety of taste. The practice was quite original, and was admirably adapted to obviate what might otherwise have been a meagre effect of the somewhat excessive slenderness of those column shafts.

Another instance of delicate perception, very worthy of observation, is presented to us in the execution of their spires. Although the Greek entasis of *columns* was wholly unknown in the Gothic school, a feeling exactly similar taught them to give an entasis to the spire; so delicate as to be scarcely perceptible, and yet, I believe, never wanting in the best examples.

Time will not permit me to pursue this subject much farther; but the sketch would be unpardonably imperfect were I to omit allusion to the really wonderful attention paid by the able masters of the Renaissance period to the whole subject of architectural detail. I do not mean that in the practice of those masters there was any excessive resort to ornamental detail. On the contrary, the best artists of the quatro-cento school usually aimed at producing good effects by very simple means, although undoubtedly they showed themselves to be complete masters of ornament when they thought proper to resort to it. The architecture of L. B. Alberti, of G. Romano, of Raffaelle, and others of that early and pure school, is marked by consummate sense of beauty of proportion, and of general outlines, but no masters knew better,—I believe I should say none but the Greeks knew so well,—how to enhance that beauty and to enrich those outlines, by details of highest purity and simplest character.

I may, perhaps, be permitted to extend my observations on the susceptibility of good taste in the minor objects of design, by referring to the subject of fictile vases.

When we regard those ancient works in the early purity and youthful freshness of the Greek style, the beauty that pervades those insignificant objects of the potter's art appears to me truly surprising. It would be difficult to illustrate the *power* of art more forcibly by contrasting the exquisite outlines of that very early Greek earthenware with the pots and pans of this vulgar modern world. There is, perhaps, no greater *manual* dexterity, no more mechanical skill, shown in one than in the other; there may, indeed, be less exactness of execution in the old than in the new works; but the one has those peculiar qualities which the educated eye at once recognises as the elements of beauty, whilst the other lays claim to no attention, and has no æsthetic merit. Certainly it is a phenomenon that would be very surprising, were not the fact so familiar to us, that during the 2,400 or 2,500 years that have passed since the best of those fictile works were produced, a period which comprehends the whole history of human civilization from the period of primæval simplicity down to the vulgarities of the nineteenth century, there has been an unceasing struggle to alter, vary, and improve: after indulgence in every species of novelty, excess, and caprice, we have never succeeded so nearly in producing forms beautiful in shape and colour as when we have copied the old Greek type. Beautiful things of this nature have been found in Oriental art; beautiful in Mediæval art; beautiful, too, in the age of the Renaissance: but analyse those several beauties, and you will find that those please us most in proportion as they approach the nearest to that wonderful type.

This is not encouraging to modern invention; it is not gratifying to modern vanity; but it is true, and therefore demands our observation. At all events, it should teach us *modesty*, and stimulate us to respect and to study those examples which our earliest teachers have set before us. Whatever may be the cause, I think the fact is undeniable that, though the arts and sciences are usually regarded as kindred pursuits, and are supposed to be intimately associated, they are in truth widely different in their history and in their *destiny*. Science has been progressive: step by step men have advanced in the knowledge of the exact sciences as time has advanced. The step of to-day helps us on to the acquirement of a further step to-morrow; and the horizon is thus ever widening as we advance. Quite otherwise seems the destiny of art. The *small* objects of art to which I have been adverting illustrate this anomalous fact, and so perhaps may be said of almost every other object of design, in the sister arts as well as in architecture. Has Raffaelle yet been surpassed? Have the works of Phideas yet been rivalled?

But I must return to the humbler theme of my lecture of to-night. It is not of *statues* that I have to speak, but rather of the pedestals they stand upon; and indeed of these pedestals I have much to say.

I should be pronouncing a very unmerited condemnation of sculpture were I to say that statues and their pedestals have, in modern times, shared the same fate. One might have expected that the same taste and talent which an artist exercises in the production of a fine statue would distinguish equally the base it stands upon. Can we admit that such has been the case? Have we, during the last 200 years, made great progress in the art of designing pedestals? Has the work at Charing Cross been thrown into the shade by *any* subsequent work of like nature? Have we gone on, step by step, improving on our ancestors, in form, or in proportion, or in graceful decoration? But I am not about to enter critically into the masonic

efforts of modern pedestal builders. It will be a more agreeable as well as a more profitable task to invite your attention to the pedestals of other times and of other countries. Few exist of classic times; very few of them indeed are standing where they were originally placed. After barbarian violence has thrown down a fine statue, and after time or accident has buried it, its own merits or value may cause it to be disinterred. Not so, however, the masonry on which it stood; and thus we are left in general ignorance as to the exact character and proportions of classic pedestals. We have, fortunately, in the British Museum, a few examples of the highest quality of Greek art, and although the overcrowded state of our galleries there forbid the public exhibition of them, they are well worthy of your careful study. They are, it is true, of but small size, and of very simple design. Indeed, it does not appear to have been the practice of the sculptors of that refined period to place their groups upon pedestals of any pretentious proportions. It would appear as if they desired these pedestals to attract notice as little as possible, so as not to divert attention from the nobler work which was placed upon them. They had usually, perhaps always, a moulded capping and a plinth; but these mouldings are kept the very reverse of forcible in their effect. Even the inscriptions on these pedestals are tenderly treated; the letters are small, regular, and uniform in size, and in form always extremely slender, and always of very moderate intaglio, presenting a singular contrast with the pompous lettering of later days.

Were it not likely to lead me astray from my proper subject, I might suggest that, analogous to this deterioration in the treatment of their inscriptions, is the style of their composition. In the best times of art these incised records are condensed in style, and severe and simple in their mode of expression. It is only in later and degenerate times that we find the lettering bold in size and violent in depth, the lines capriciously varied in their length, and the sentences "exhausting the pomp of woe" in inflated and grandiloquent words.

I would request your attention to the beautiful monument of Colcone, one of the great Venetian Condottieri, of the date of 1495. The statue, by Verochio, it is not my business to advert to; but the pedestal I regard as one of the most ornate, as well as one of the most elegantly-proportioned, pedestals that I can call to mind: it is a noble example of the quatro-cento style, a style of which you have so often heard me express my qualified admiration.*

SOMETHING ABOUT A HOD OF MORTAR.†

IT is a question of little moment to the architect or builder, from whence Nature obtains the materials for her innumerable productions. All agree that exposure to atmosphere is essential to fully develope the requisite properties of mortar; but many high authorities entertain an opinion that the quantity of carbonic acid in the atmosphere is so small, that the hardening of calcareous cements cannot reasonably be attributed to that source. However small that proportional quantity of carbon may be, we know that immense supplies are momentarily and eternally being exhaled from all animals, and generated by combustion of all kinds. The growth of forests and the produce of meadows demonstrate that an inexhaustible quantity of carbon is furnished by the carbonic acid of the atmosphere; also, that an apparently trifling or unimportant cause will produce a wonderful effect if continued, without interruption, during ages. Another requirement for the induration of mortar is the presence of moisture, or a certain amount of dampness, without which the mortar will not become firm, except perhaps during a much longer period; if it be dried rapidly, as in setting a stove or building an oven, it will not easily harden, but will remain a long while friable.

It has been stated that the hardening of mortar arises from the presence of carbon and oxygen formed into carbonic acid, which is absorbed by the lime; but from what source the carbon is obtained, is until this time rather mysterious. Oxygen is abundant in the composition of water and atmosphere; and that quick-lime has an astonishing affinity for it is evinced by the practice of using a little powdered lime, tied up in muslin, to beat out a minute portion of dust on the surface of polished steel or iron goods, such as fire-irons, fenders, and fronts of stoves of a superior quality, when not in use, to prevent their rusting. A more delicate instance is that of the manufacturers of needles, watch-springs, cutlery, &c., who generally put a small packet of quick-lime in any box or parcel of polished steel goods they may be sending to a distant customer, or with goods which may be put away as not likely to be wanted for some time, as security from rust. The following is very different, yet bearing upon the same principle. When bricklayers leave off work for a day or two, as from Saturday till Monday, they push their trowel in and out of the moist mortar, so that the bright steel may be smeared all over with a film of mortar, finding this plan an effectual remedy against rust. In Wren's "Parentalia," page 206, there is a passage bearing upon this subject:—"In taking out cramps from stonework at least 400 years old, which were so bedded in mortar that all air was perfectly excluded, the iron appeared as fresh as from the forge."

A genuine fresco painter is well aware how soon a hard film of shiny carbonate of lime forms on the newly-stuccoed surface on which he is to exercise his art. In order that the picture shall be thoroughly or properly frescoed, it is indispensable that the artist should begin to paint the moment the plastering is finished, and that he undertakes no more than he can complete in the time of one day; for on the day after a shiny glaze of pure crystalline carbonate of lime is formed on the surface over the painting. Those who are about buildings in progress must have observed that, if a standing pool of water lay within the influence of a quantity of mortar without being disturbed for a day or two, it will be covered with an exceedingly delicate film of solid transparent carbonate of lime; which, if not removed from the surface of the water, may be gently disturbed in large flat sheets, displaying most brilliant prismatic colours. These are some of the instances of incrustation and hardening which must be produced by the carbonic acid of the atmosphere.

Pure lime alone, or, more correctly, mixed with water, and used in rather considerable masses, acquires only a very slight degree of hardness, and that chiefly on the outside of the bulk; hence, if used in considerable thickness, it is almost worthless as a cement for building purposes. The more minutely the lime is spread, the stronger will be the mortar, as an extremely thin pellicle in immediate contact with stone, sand, or other hard and compact substance, adheres with the required firmness, owing to that interesting law of nature known as the attraction of cohesion. I cannot discover that there is anything peculiar in the nature of silicious granulated sand to render it particularly suitable for the composition of mortar, beyond that of its being hard, compact, and free from porosity and absorption; and, above all these qualities, its abundance in almost every locality renders it procurable at so reasonable a price that no other material possessing these estimable qualities can be put in competition with it.

Quick-lime alone will not combine with carbonic acid, however long it may be exposed to its action; nor will mortar or cement ever acquire the hardness which it is capable of attaining, were it not for the water, which first converts the lime into a hydrate, and is then ready to be disturbed, to make way for the carbonic acid. This process may be termed "substitution," or that power which a body possesses, under certain conditions, of turning out one of the elements of a compound, and taking its place. But in order to effect this, the atoms must be in immediate contact with each other, or at immeasurably short distances; and water acts as a sort of "go-between," a vehicle of communication to bring about an intimate molecular contact. On the same principle, lime and sand might be mixed and blended for ever, without showing the least tendency to form a compact solid mass; but by the addition of water, either from the atmosphere or intentionally supplied, they acquire the property of gradually hardening, and in due time forming excellent cement.

If the grains of sand, or rather their surfaces in contact with each other, be sufficiently numerous within a given space, and uniformly dispersed, then the effect of the film of hydrate of lime will be sufficient to unite the grains of sand to each other, and bring the whole mass into active combination, not only with the sand, but also with the surfaces of the bricks or stones, especially with sandstones. It is impossible, or extremely difficult, to determine the best proportional quantities of lime and sand to make the strongest mortar. A superabundance of either one or the other is equally objectionable: the most advisable mixture in one case may be wholly unsuitable under different conditions; so much depends upon the purity and freshness of the lime, the cleanliness of the sand, the size and varied bulk of its grains. If each separate piece of sand be covered with lime about the thickness of an ordinary coat of paint, I should be disposed to consider such an amount as very near the perfection of quantity.

Smeaton has stated, from his own experiments, that unburnt clay, even in very small quantities, materially interferes with the hardening of mortar, and disposes it to perish in a few years; it is, therefore, obvious that the use of dirty, clayey pit sand should be avoided as much as possible. This remark applies especially to the present time (February, 1863), because large quantities of gravel, obtained from subterranean railways and main drainage works, are now being used in London for concrete and mortar, without any attempt to get rid of the clay, by washing or other means of separation, from the flinty portions; consequently, all buildings constructed with mortar or cement made with such objectionable sand or gravel must be contrary to the intention of the architect, and against the interest of his employer.

The usual practice of making mortar, intended to be of the best quality, is to mix three measures of sand with one of lime; but if the grains of sand were of two or three different sizes, a much greater quantity might be introduced with advantage, as I am inclined to think it would form a firmer cement than if a larger proportion of lime were used. With ordinary river sand, a coarser variety might be added; and then shingle, or moderately-sized broken flint, in grains or pieces about the bulk of usual dinner peas: the component parts would then be one bushel of lime, three bushels of common sand, one of coarse sand, and one of shingle; or collectively, five bushels of silicious matter to one of lime. To make sure that the various sized flinty grains shall take their respective places in the mass, I propose the following mode of preparation: the lime to be slaked as usual with water, if practicable within a day or two after it is removed from the kiln, and reduced to the consistence of cream, to which the fine sand should be first added, and intimately mixed, until every grain has been immersed in the cream of lime; then the coarser sand to be equally well mingled with the previous compound of lime and sand; after which the coarsest sand or shingle to be added, and thoroughly intermingled with the entire mass, which will then be ready for the bricklayer.

Judging from the many technical habits and customs in every trade, known only to the manufacturers and their workmen, it would seem advisable to hear what the operatives themselves have to communicate about the art and mystery of mortar; but, under present circumstances, I fear we should not derive much useful information from the bricklayer or general builder: in fact, these individuals are only required to do as they are told, and to conform strictly to the full intent and meaning of the architect's specification. Consequently, I refer to the writings of the most eminent architects and engineers upon this important chemical or scientific subject; but, instead of finding something like uniformity of general principles, and a little approximation towards the same proportional quantities of the materials which are to compose the mortar, we find the most unaccountable and contradictory directions, and, to all appearance, a vast amount of ignorance, about one of the most valuable matters in the construction of a well-built edifice. The fertile imaginings of one age are considered matter of fact in the next; error steals imperceptibly into practice, and the most conflicting usages are the result. One architect of established reputation has specified that the mortar is to be composed of equal quantities of lime and sand; others of equal celebrity will have two, three, or even four measures of sand to one of lime.

Some architects have no objection to fine gravel full of clay, or muddy sand in all its genuine dirtiness, being used in the composition of mortar, provided that an extra portion of lime be added to the mixture; presuming that, as lime forms the most important and most expensive ingredient of the cement, an extra allow-

* To be continued.

† By the late Mr. C. H. Smith. See p. 22, *ante*.

ance of that article will compensate for the large amount of deleterious rubbish in the sand. This is unquestionably an error of judgment. A superabundance of either lime or sand, no matter how good it may be, is, under any circumstances, objectionable.

Formerly great importance was attached to the continued manual labour of beating mortar. Vitruvius says, "When the plaster is mixed, cause it to be beaten with wooden staves by a great number of men, and use it after this preparation.* Smeaton reckoned it a fair day's work of a labourer to mix and beat up two or three hods of mortar fit for use. At the present time, beating has become obsolete. The pug-mill, or the mill-stones of modern practice, will mix the materials more completely, and do a day's work of a labourer, according to the beating process, in two or three minutes; yet, as if wonders would never cease, we find in the specification of a celebrated bridge builder, that "the mortar shall not be mixed in a pug-mill, but shall in all cases be beaten up to the proper consistency, as practised in former times."

Pliny decidedly states that the older the mortar the better it is for building purposes. The same author informs us that the old Roman laws, which provide for the permanence of buildings, expressly state that "the *undertaker* to build a house at a certain price shall use no mortar that has not been kept in a covered pit for three years;" and remarks that buildings erected during the operation of such law were not liable to cracks. Compare the above with modern practice. Within my own recollection, Sir Robert Smirke, who had just returned from foreign travel, and was at the time quite a young man, consequently not very deeply versed in practical building, yet being engaged in the rebuilding of Covent-garden Theatre during the year 1808 or 1809, ordered the lime to be brought from the kiln without delay, to be immediately made into mortar, and used "*smoking hot*" by the bricklayers, greatly to the astonishment of the sapient builders of that time, who arrived at the conclusion that the "young and inexperienced architect had adopted some wild scheme of boiling the lime, instead of baking or burning it," as heretofore in general use. Although I was merely a lad at the time this hot mortar was used, I have the most perfect recollection of seeing it in progress, and hearing the remarks and wonderment of those who felt interested in such matters; consequently, when the opportunity offered of examining that brickwork, after half a century's erection,—namely, when the walls were demolished after the fire a few years since,—I was much pleased to find that the mortar was as hard and solid as any reasonable person could either wish or expect it to be.

Many other cases are recorded wherein the lime is to be used as fresh as possible. At the new prison, Tothill Fields, "hot lime" was specified to be used. The Royal Exchange was built with lime thoroughly and freshly burnt, with strict injunctions that it should be kept in an inclosed shed, and no more mortar to be made at one time than was sufficient for each day's consumption.

THE DESIGNS FOR THE SCOTTISH MEMORIAL OF THE PRINCE CONSORT, EDINBURGH.

IN answer to the requisition of the Committee of Advice appointed by her Majesty, sixty designs have been sent in, as already mentioned in the *Builder*, and are now exhibited in the Scottish National Gallery. As is usual in general competitions of this nature, some of the designs are unworthy of notice, and many of them commonplace and indifferent. In the present notice it is proposed to glance at those most worthy of remark, and the order of the catalogue will be followed.

No. 3. J. B., Edinburgh.—A design of considerable merit. It is in its detail of the Italian Renaissance, as seen in the library of St. Mark's, at Venice. It is square in plan; of three stages; proposed height 200 ft. The first stage is of four arched openings, flanked by coupled columns, the spandrels filled in with figures. Under the canopy thus formed stands the statue of the Prince. The second stage is similar to the first, reduced in breadth; and the third is solid, and crowned by a small dome.

No. 6. W. L. Moffat, Edinburgh.—A plain Gothic column, girded by a wreath half-way up its height; at the base semicircular projections, showing sculpture. Above the capital are niches filled with figures, from the centre of which rises the statue. This design is somewhat novel in treatment, but dumpy and ungraceful in its proportions.

No. 7. Messrs. Slater & Carpenter, London, exhibit four drawings of a monument of the same character and detail as that projected for Hyde Park, but more resembling in outline the Scott Monument in Edinburgh; and that resemblance is the objection to its erection in that city. The details are carefully worked out, and the general effect decidedly good.

No. 12. J. Anderson Hamilton, Edinburgh.—Four Byzantine arches raised on granite pillars support a dome, ribbed and crocketed, which is crowned by an open lantern. Detached columns to the right and left support winged figures. Mr. Anderson's conception is good, but badly carried out; the parts are ill-adjusted, and want balance and repose.

No. 20. J. Starforth, Edinburgh.—Similar in outline to No. 3, but better in detail. The stages are solid, and the statue is placed in a niche in the lowest. There is a considerable amount of sculpture well distributed. If placed in West Princes-street Gardens, a monument of this description would form a good companion to the Scott Monument.

No. 23. J. Noel Paton, Edinburgh.—Mr. Paton exhibits drawings of great beauty, and the public are apt, on that account, to give more heed to his design than its merits as a composition would perhaps obtain. It is square in plan, and consists of four Italian Gothic canopies, under which are seated gracefully-conceived figures. From the centre of the canopies passes a square shaft, rising to a small height above them, and on its capital stands the effigy of the Prince. On the base are bas-reliefs, composed in a truly artistic style. The great objection to this design is, that the architectural part of it is unmeaning, and that it would be swamped by the sculpture, neither enhancing the value of the other.

No. 25 (with reference to model No. 53). W. Calder Marshall, London.—This is a red granite pillar (similar to Mr. Scott's Crimean Memorial at Westminster), supporting the statue of the Prince. The base is of blue granite, and is flanked by figures at the angles. The general arrangement and proportions are good. If placed on a suitable site, it would be a great acquisition to the adornments of the city.

No. 33. D. Cousin, City Architect, Edinburgh, gives a Corinthian Temple, of which particulars have already appeared in the *Builder*.

No. 34. David Bryce, Edinburgh.—A keep of the Scotch baronial type, to be placed on the Castle rock: the statue in a vaulted chamber in the basement. Admirable in itself, this design appears inappropriate as a monument to a Prince whose life was one of peace.

Nos. 39 & 40. D. Rhind, Edinburgh.—The first, a classical design, too much like a mausoleum, and good as such. The second, a shaft from a Gothic church, with a scroll running spirally from base to cap; above the capital a series of canopies, and the statue at the summit; the base surrounded with sculptured figures and couchant lions.

No. 43. Joseph Mitchell, Westminster.—A copy from Nuremberg, not improved by the artist's additions.

No. 49. Model. J. Rochead and J. Steel, Glasgow.—A very grand classical design, the cost of which would be very greatly beyond the amount at the disposal of the committee.

No. 57. Model. J. B. Philip and R. Edgar, London.—An elegant circular Corinthian structure, similar to what Edinburgh already possesses, although on a larger scale.

No. 58. Model. R. Baldie, Glasgow.—Of the same character as the last.

Besides the designs above referred to, there are several equestrian statues (one of them hoisted atop of a Gothic cloister); numerous obelisks, more or less elegantly proportioned, especially one by Mr. Durham, already noticed; a few St. Eleanor crosses of some merit; and two or three indifferent Gothic towers.

The committee called the attention of intending competitors to several sites, and particularly recommended one on Arthur's Seat. This recommendation excited considerable surprise at the time, as a more unsuitable place for a monument could not have been fixed upon. The chief beauty and charm of the hill consist in the peculiarity of its outline and the aspect of wild nature which it possesses. Near to the city, it yet appears not to belong to it. The pedestrian may in a few minutes place himself in as wild a solitude as if he were in the heart of the Pentlands: he may scramble through thickets of furze, startling the linnets from their retreats, and sometimes a rabbit may scud across the green sward to a place of shelter. Once begin to dot this quiet retreat with monuments, however beautiful, and its charm is gone.

The newspaper press has spoken out strongly against such a piece of vandalism; and the Architectural Institute has been equally emphatic on the subject (as shown on another page); and it may be said that the mass of the public who know or care aught about the matter acquiesce in this decision. If the selected design be one intended for an elevated position, the Calton Hill affords several such; but there are no lack of sites, and good sites, within the city; and any of the others enumerated in the advertisement of the committee would be decidedly superior to the one they express a preference for. It is pleasing to observe that the best designs appear to be intended for one or other of the sites within the city.

* Pliny states that the Greeks had a method of beating or tempering their lime and sand for mortar, in a large mortar with a great wooden pestle.

DIRECT COMMUNICATION BETWEEN LONDON AND CALCUTTA BY LAND IN A FORTNIGHT!

SIR,—When last I visited the Mont Cenis Tunnel, I sent you an account of the works, with all details; and the article, which you published in a prominent part of your useful and well-known paper, gave the English public the only true account of the progress of that great work ever published in this country. I therefore write to inform you that the works have been steadily continued ever since I last wrote; and when I passed there, a month or so ago, I saw great advance had been made in the interval.

On the Italian side, last year, the average advance has been 5½ ft. per day of twenty-four hours, and on the Savoy side 3½ ft. during the same period. The result is, that about a third of the whole distance to be pierced has already been tunnelled, and out of the eight miles which is to be the length of the whole tunnel, more than two miles and a half have already been completed, so that there remain better than five miles and a half yet to be excavated, and lined, and laid, before the trains can pass beneath the Alps; and the late minister of public works, General Menabrea, stated it as his opinion that it would take yet twelve years to finish entirely.

Your readers will remember that I made a calculation which led me to very nearly the same results; and if it is done in anything like that time, it will certainly be the eighth wonder of the world.

While on this subject, I cannot omit to state, for the benefit of general readers, that no part of a railway is so safe as a tunnel, provided it has been properly constructed. Embankments are liable to slip after heavy rains; and even if they remain in good order, to my thinking they will never be safe until it becomes the invariable custom to put a "guard-rail" alongside *one* of the rails, so as to prevent the flange of the wheel from mounting, especially when the embankment is of any great depth; and this should be made obligatory *on embankments of every kind*; for in such parts of the line immense danger may and is almost sure to result, if a train should ever get off the line.

Again, in open cuttings, pieces of rock or loose earth often give way, and (especially in wet weather or after rainy seasons, or after periods of heavy frost) detach themselves, and either obstruct the way or cause obstacles to the advance of the trains; or else portions of them may fall upon the carriages or on the rails, and do harm to the passengers and do infinite damage.

In a tunnel, I repeat it, there is less likelihood of accident than on any other part of a railway, *ceteris paribus*; but then proper precautions should be taken, and should *be made obligatory by legislative enactment*, and one of the principal conditions which should be imposed *upon all railway companies* should be to have gas lamps *constantly* lighted in every tunnel, as is the case on the Continent; and in addition to this there should be lamps in *every* carriage, *first*, *second*, and *third*: without this, danger will always be inevitable. Some persons may urge as an objection, expense; but this should not be listened

to for a moment. Whatever is proved to be requisite to the safety of passengers by railroad, it is as much the interest of directors to provide, as it is the interest of the public to see them provided, and of the Government to enforce them.

Directors, engineers, shareholders, and all who have any interest in upholding the new state of things, should do all that lies in their power to make railway travelling as safe a means of locomotion as possible. They have also the interest to make their property as good as possible,—not by parsimony or by stingy saving, but by providing the public with all accommodation really requisite sincerely and honestly.

Their property will be sadly depreciated if they omit to do so in time, for otherwise perhaps the public and Government would find it incumbent on them to interfere if the responsible administrators went on longer in a careless manner. Their plan should rather be to forestall all improvements, to offer premiums for new and useful inventions, and *to make use of them* before even popular clamour has made itself heard on the subject.

It is better to have the public too well served than to have to pay large sums as indemnities; and it might find their property hampered or interfered with.

In my next I shall describe how railway property may be enhanced in value, and how it may be made, more than it has hitherto been, a safe and very advantageous investment; but the scope of this article is to draw attention to a subject which *I was the first* to bring under public notice, namely, *direct railway communication with India*.

Railways are our own peculiar invention; and although we claim no monopoly, yet still we ought to take advantage of the system to put ourselves in direct and speedy communication with our great Indian Empire. I wrote on this subject to Lord Clarendon many years ago. He brought it under the notice of Lord Palmerston, who transmitted my letter to Sir Charles Wood, who, in his turn, placed the whole matter, with my plans and suggestions, before the local Government of India.

The line of route I then proposed was across France and Austria, Turkey in Europe, and Turkey in Asia, down the Euphrates Valley, and then skirting the Persian Gulf and passing through Persia, thus join this great Europeo-Asian Railway to our own network of Indian rails. This must eventually be carried out, so that it will be as well to keep this grand idea constantly in view.

But as, in order to be practical, we must not aim at too much at once, I proposed *temporarily* to cross France, taking advantage of her railway leading to Switzerland, and then go on to "Chur," or "Coire," and there passing the "Lukmanier," to get into Italy, make use of the lines of that country, and so arrive at Brindisi, the old Roman port Brindusium, whence a line of steamers should be at once established between that port and the nearest point on the Asiatic shore to the Euphrates valley.

This *route* might be somewhat modified by taking the valley of the Arc, in Savoy, and crossing the "Mont Cenis," either through the tunnel or over the Pass.

Since I made these suggestions, which were favourably received by practical men everywhere, and by the governments interested, a new plan has been suggested by Mr. Fell, which, from experiments he has made, bids fair to be very successful. His plan is to go over mountains instead of travelling through them, and the Emperor's government has authorised him to make experiments on the most difficult part of the "Mont Cenis" road.

To these experiments, which are to be made on French territory, are to be invited representatives of the Italian, Austrian, and Indian governments. I sincerely hope they may be successful, and really believe they will; but, be that as it may, however, we must lose no time in bringing our Indian possessions into connexion with the British Isles by quick and uninterrupted transit.

The glories of the East, the beauties of the Vale of Cashmere, the wealth and the art of India, the vast treasures of an unexplored mine of silver, of gold, of diamonds, and all kinds of precious stones, the produce of extensive tracts of rich and readily cultivated territories and illimitable domains,—all these may be brought within a fortnight's journey of London, the real metropolis of the world, by energy, perseverance, and determination; but the matter is urgent in the extreme. I have planned the means of raising the capital, and made many of the arrangements for carrying out this grand undertaking, which will be a credit and advantage to our own country, and will form an important epoch in this great world's history. I therefore hope the public will take that interest in it which so important a subject requires.

WM. H. VILLIERS SANKEY, Civil Engineer.

ENGRAVING AND OTHER REPRODUCTIVE ART PROCESSES.*

I HAVE said that the discovery of lithography gave a means of printing from the surface in a manner similar to the process of printing from type or wood blocks; but, owing to the slight relief of the drawing on the stone, and the necessity of wiping with a wet sponge, and gumming the surface of the stone to prevent the absorption into the stone of the grease from the ink, the process is, nevertheless, a tedious one. But this evil is in a measure compensated for by the facility which the lithographic process affords for multiplying copies of a drawing when once made, by the process of transferring an impression taken from the drawing first made to a second portion of the stone; and as this can be repeated to any extent, a number of copies can be printed at one operation—the only limit being the size of the stone, and the nature and size of the design to be printed. The want of an efficient substitute for steel and copper plates, in the form of a surface block from which to print with the type in ordinary type printing-presses, still remains a desideratum, notwithstanding all that lithography has done, and the many attempts which have been made to find one. Casts in relief from engraved copper plates were among the earliest efforts in this direction, but the cost and labour of producing a uniform surface fit for the printing-press has not hitherto led to a commercial success. We now come to a period in the history of engraving at which another new discovery was given to the world, and which has since played an important part in the arts. I refer to the discovery of the process of electrotyping. In the year 1800, Volta, in a communication to the Royal Society, announced his discovery of the Voltaic pile. By its means Nicholson effected the decomposition of water and of several metallic salts. Cruickshank next invented the galvanic battery, to the positive poles of which he attached silver wires. The other ends of the wires were placed in a glass tube containing a solution of acetate of lead. When the electric current had passed through the solution for some time, metallic lead was found deposited on the negative pole. Brugnatelli observed the transfer of the elements of a decomposed compound from one pole to another. In 1801, Wollaston made the following observation, viz.;—That if a piece of silver, in connexion with a more positive metal, be put into a solution of copper, the silver is coated over with the copper, which copper will stand the operation of burnishing. It was not, however, till after the discovery, by Daniel, of his constant battery, in which copper is continually reduced upon the negative plate, that it was observed that the newly-deposited copper, when stripped off, had upon it a counterpart of every scratch on the plate upon which it was deposited. In 1837, Mr. Spencer, of Liverpool, discovered that if a portion of the surface of the negative plate was covered with varnish, then no deposit took place upon those parts. He next conceived the idea of applying this process to the arts, by coating a piece of copper with varnish and wax, and of cutting a design through it so as to leave the copper bare, and then to deposit a metal upon these parts, so that on removing the varnish the design would be left in relief; but no account of these experiments was published till September, 1839. In May of that year, it was announced in the *Athenæum* that Professor Jacobi, of St. Petersburg, had discovered a method of converting any line, however fine, if engraved on copper, into a relief by a galvanic process. This announcement was followed by a letter from Mr. C. J. Jordan, which appeared in the *Mechanics' Magazine* in June of the same year; and it is due to Mr. Jordan to state that the suggestions he then made have since been acted upon with considerable success. Mr. Robert Murray next discovered that if the surfaces of plaster casts and similar non-conducting bodies were covered with plumbago or black-lead, it was no longer necessary to use metallic moulds, which had hitherto proved the great barrier to the progress of the electrotype art. Chemists and artists were not slow in their endeavours to apply this newly-discovered process as a means of multiplying copies of engraved plates, both of copper and steel. In the latter case, an impression was taken from the steel-plate, by covering it with a sheet of tinfoil, and passing it through the printing-press. The result was a print obtained in relief in metal. Upon this a deposit of copper was made of the required thickness, and the required plate from which to print was obtained. In the early experiments the plates were thin, and curled in printing; this defect was, however, soon overcome, and the practice of engraving in copper, where large plates were to be produced, as in the examples issued by the Art-Union of London, was again soon reverted to, thus affording facilities which are now largely availed of, for multiplying copies of costly engravings at the same time that the quality of the works produced can be maintained against wear.*

The next application of the electrotype art to which it is necessary to refer, was that patented by Mr. Edward Palmer, and introduced under the title of "Glyphography, or engraved drawings for printing at the type press after the manner of woodcuts." The process was a compound of drawing and engraving on a plate of copper, the surface of which, having been stained black, was then covered with a thin layer of a white opaque composition. A tracing of the design to be drawn or engraved was made. Needles, of various degrees of breadth and form, were then employed to remove the composition from the surface of the copper, beginning with the greatest breadths of shadow, and gradually working up to the lighter and more delicate parts of the design. When finished, an electro deposit was taken from the drawing so made, and a block in relief was thus obtained, which, being mounted in the same manner as an ordinary stereotype plate, was capable of being worked in with the type, and printed from, in the machine and steam printing-press. This process is not so generally known as its merits and capabilities entitle it to be, and the problem of how to obtain with facility a substitute for the wood block still remains unsolved. Among the numerous other plans proposed for use in the production of engraved plates or blocks, may be mentioned voltatype, electro-tint, daguerreotype, and etching by galvanism.

Etching by galvanism was suggested by Mr. Alfred Smee; it was similar to the ordinary process of etching, but instead of being bitten in by a direct acid action, Mr. Smee suggested that the etched plate should form the positive pole of a battery, and being dipped in a galvanic trough of sulphate of copper through which a current was passed, particles of copper would be given off from the etched lines of the engraving; the plate was to be removed from the bath from time to time, for the purpose of stopping out, and graduating the tints required, as in the usual etching process. * * * *

I must now retrace my steps and recal attention to the discovery of Mr. Murray, who, having succeeded in giving a conducting surface to non-metallic bodies by the use of plumbago, placed within the reach of the scientific man a new and as yet unheard-of process of engraving, which is now known as Nature-printing. The first examples of this art were also due to the discovery and use of a substance made known to the world, through the Society of Arts, in 1843—I mean gutta percha. Nature-printing, as it is called, was first introduced to the notice of the public through the Society of Arts, which, in its notes of proceedings for the year 1849, printed a communication from Dr. Ferguson Branson, of Sheffield, in which he stated he had ascertained that by embedding a fern leaf, or any other flat body, in softened gutta percha, and then allowing the gutta percha to cool, upon removing the leaf a perfect mould was obtained, from which mould an engraved copper plate, fit for the printer, could be secured by means of the electrotype process. A plate so obtained, with prints taken from them, accompanied the communication. Nature-printing, however, did not long remain in this normal condition; for in the Exhibition of 1851, in the Austrian department, were exhibited specimens of plants, flowers, &c., printed in colours from copper plates. It had been ascertained that if a rolling pressure was

* See page 24, *ante*.

* The Art-Union of London soon abandoned the use of electrotyped plates.—ED.

employed to imbed the object to be copied, then soft sheet lead could be used; and that process was subsequently introduced into this country, and employed by Mr. Henry Bradbury in the production of his work on "Ferns and Mosses." Nature-printing did not stop here, for in a communication read before the Society of Arts in 1854, by Mr. Aitkin, of Birmingham, we find that, by means of a rolling pressure, objects of various kinds, and of the most delicate description, such as thread-lace, the down of a feather, &c., could be made to engrave themselves in Britannia metal, copper, brass, German silver, or tin plate; and, to use Mr. Aitkin's words, "more wonderful still, on what we are led to believe is the most dense and darkest metal in ordinary use,—namely, steel." I must not, however, here enter upon the industrial and manufacturing uses to which electrotype-deposits and nature-prints have been applied, but will direct attention to another process, in which the principle of nature-printing has been proposed to be applied as a substitute for engraving,—I mean the process submitted to the society by Mr. George Wallis, and called by him "Auto-typography." In this process Mr. Wallis substitutes for, or in combination with, a natural object, a drawing made upon a surface of gelatine. This he selects as it has no grain, and is to a great extent non-absorbent. His drawing is made with an ink or fluid, which, when dry, either crystallises or forms a naturally granulated body in relief upon the surface of the gelatine. The drawing, having been carefully prepared, is then passed through a press, in contact with a metal plate, into the surface of which the drawing becomes embedded; and the result is a transcript in copper of the artist's own drawing, from which prints may be worked in the usual manner. Notwithstanding the suggestions above related, I regret to say we are still without the great desideratum, a surface block, or a ready means of obtaining one at a commercially economic rate, by a process which will give to the artist a true translation of his sketch or finished drawing, to the commercial world an economic means of extending a knowledge of art, and of cheapening the cost as well as extending and facilitating the means of book illustrations, and to the public the advantage of a ready means of cultivating economically a knowledge and a love for all that is elevating and beautiful both in nature and art, as well as a means of educating the youth of our country by means of cheaper, more numerous, and better examples than are at present generally attainable. But before I close this communication, which I propose to do by referring to other processes which I think deserve more attention than they have hitherto received, and which I believe to be capable of helping to solve the problem of how to obtain a surface block, I must in justice refer to the photo-galvanographic process of Mr. Paul Pretch, the photo-lithographic process of Colonel James and others, and the process for enlarging and reducing drawings and engravings, patented by Mr. H. G. Collins. The acierage process is thus described by M. Joubert:—Mr. Grove made efforts to engrave the image obtained upon the daguerreotype plate, and it is due to Mr. Archer, who was the first to propose the use of collodion as a medium upon which light might be made to impress an image, that I should state that it is to that gentleman's discovery that the world owes its present advanced position in the art of photography. Without the collodion film, Mr. Paul Pretch's galvanographic process of engraving would not have existed, as light could not be transmitted through the daguerreotype plates, and the paper processes of Mr. Fox Talbot and others would have been inadmissible. Mr. Pretch, knowing that gelatine, if treated with bi-chromate of potass and submitted to the action of light, possessed a power of expansion; and availing himself of that fact, used a photographic image taken on collodion as a means of partially intercepting the rays of light, thereby regulating their action upon sensitized gelatine, and as a result he obtained a positive photographic image in relief in gelatine. The image, being allowed to dry, was then coated with blacklead, and served as a mould in relief upon which to deposit, and from which he obtained, by electro-deposition, an engraved copper plate of the original collodion photograph, from which plate-prints could be taken, as in ordinary copper-plate printing; and it is right to add, that some of the best specimens of prints from chemically-engraved plates ever seen were so obtained and introduced into commerce. But the fault which attached to the aquatint and mezzotint processes of engraving, also attached to Mr. Pretch's process,—viz., the surface or grain of the plate was too fine to yield a large number of good impressions, and that is, no doubt, one of the many causes which have impeded its extended use. The acierage process of M. Joubert, for coating copper plates with an iron surface, was not introduced at the time Mr. Pretch was working his invention. Mr. Pretch succeeded in producing surface-blocks by his photo-galvanographic process. In order to obtain a surface-block, it must be borne in mind that the process, as compared with the intaglio plate, is reversed. In the engraved plate, the impression is printed from the lines cut into the plate; but in the case of all surface-blocks, it is the portions which are not to be printed from which have to be removed by the graver. In like manner, Mr. Pretch used a negative photograph in one case, and a positive in the other, thus reversing his results. Colonel James, of the Hydrographic Department of the Government, has introduced and used a process of photo-lithography, to which I cannot do more than allude. It is similar, in many respects, to the photo-lithographic and zincographic process described by Mr. John Walter Osborne, in the *Photographic Society's Journal*, vol. vii., pages 163 and 213.

Mr. Collins's process for enlarging and diminishing drawings or engravings was chiefly mechanical and lithographic. The plan was as follows:—A print from any engraved plate, wood-block, or lithograph, was taken in the ordinary manner, but in transfer ink, and upon a sheet of vulcanized india-rubber, covered with a composition of equal elasticity, and of a non-porous character. If it were desired to enlarge the design, the india-rubber upon which the impression had been taken was attached to a frame by means of hooks passing through holes made at equal distances round the edges of the india-rubber. Four bars were then passed through the body of the hooks, and the sheet was thus prepared for the extending machine, which consisted of two parts—viz., a table and screws,—the latter being used to stretch the rubber equally to the required dimensions. The impression was then transferred and printed by the ordinary litho- or zinco- graphic processes. If the design was to be reduced, the india-rubber was stretched before the impression was taken upon it, and afterwards allowed to contract to the required dimensions in the regulating machine. Mr. Collins considered that his process would afford a ready means of adapting a design, when once made, to the size and character of the same work when printed in editions of various size of page. Mr. Collins, however, found the lithographic process of printing a great impediment in the way of his progress, and attempted to obtain a surface block by building up the impression transferred to the stone, by depositing a succession of layers of printing ink mixed with suitable dryers; and when such building up of the ink had been carried sufficiently far, a cast in wax or other material was taken, and from the cast so obtained a copper block was secured by electro-deposition. This process was tedious and uncertain in its results, and, like its predecessors, failed to secure the object aimed at. I cannot help expressing an opinion that one great source of failure in the majority of the plans proposed has been, that the authors of them have been too ambitious in the selection of subjects, or almost entirely ignorant of the art of engraving. They have endeavoured to arrive at perfection at once, and have consequently failed. By beginning with art in outline, experience in manipulation would be gradually acquired, and a chiaro-oscuro effect ultimately attained to if desired; and I have little doubt that blocks in outline can be readily produced, either by the electro-magnetic or mechanical process of Mr. Hansen, or the more recently-discovered process of M. Vial.

The last processes to which I have to allude are those recently submitted by M. Dulos to La Société d'Encouragement, Paris, and a full report of which will be found in the *Journal of the Society of Arts*, vol. xi., second series, page 3. The report is accompanied by prints illustrative of the results obtained by the methods which he employs. * * * *

My object in writing this paper will have been attained if I have succeeded in showing the relation of the various art-processes to each other. I have endeavoured to point out how each succeeding process has aimed at facilitating the means of producing and giving permanence to art, and a larger commercial product at a smaller cost to the producer, and consequent advantage to the public. Each process has been applied in the attempt to produce a surface block from which to print. Hitherto, a commercial success has not been attained to, and my hope is that a knowledge of what has been done may cause others to carry on the investigation of this subject to a successful issue.

S. T. DAVENPORT.

NIGHT SCHOOLS.

IT is satisfactory to find that the subject of night schools in the metropolis is gaining an increased share of attention. The matter is most important; for on this question depends, to a great extent, the intellectual culture of a very large number of the rising generation. It is unfortunately the case that there are thousands of scholars who yearly leave the National schools at the age of about eleven or twelve years; and, in many cases, so imperfectly is their education grounded, that when the boys get to work they often forget the little they have learnt. There is a great difference of opinion respecting the means by which an effective system of supplementary night schools for such boys is to be carried out.

At a recent meeting in the room of the Society of Arts, there was a long discussion; but it does not seem that any clearly defined or practical plan was suggested. The Rev. Henry White submitted for discussion, the need of night schools specially suited to boys of thirteen to nineteen; and the desireableness of changing the name of "night school" for that of "youths' club" or "institute." He would add, to opportunities for instruction, the means of innocent amusement and pleasant fellowship. He would propose to have a reading-room, supplied with popular magazines and draught-tables; and would desire that the teachers should make themselves the friends of the pupils. He was also in favour of cricketing and boating clubs in the summer months.

While agreeing with Mr. White upon the advantage, when possible, of combining amusement with education, there are certain reasons which cause us to doubt whether a large amount of amusement would not be liable to lead the attention of such scholars from the main point. Mr. White thinks that these schools should be self-supporting. This, too, is a most desirable thing; but we fear that the experience of the past is not such as to show that this can be depended on. For the purpose of rendering the night schools serviceable to the class for whom they are so much needed, the weekly payments should not be more than 4d., or, at the most, 6d,—that is, 4d. for boys under fifteen, and 6d. for those over that age. In many districts in the metropolis it would not be easy to get a regular attendance of from 50 to 100 scholars. The revenue, in such instances, would be insufficient for the payment of a good master and two efficient assistants. There would also be the cost of firing and gas-light; or, if distinct buildings are to be provided, as Mr. White hints at, there would be a large additional expense for rent. If, however, the attendance of unpaid assistant-teachers could be depended on, and the National school-rooms were devoted to the use of the night schools, the payment of the boys might be brought to cover the charges, and allow a sum which many of the masters of the National schools would consider worth the trouble of trained superintendence; and without this the night establishments would be of but little service.

Mr. Smith, diocesan inspector of Canterbury, remarked that night schools were on the increase; but added that what was applicable to London was utterly inapplicable to most country places. He had come to a conclusion that there should be an endeavour in the night schools to continue the control and superintendence of the youths after the age of twelve; and that it would be successful in that respect he would undertake to say from his own experience and that of others. The night schools were useful not only as a means of keeping up the attainments acquired in the National schools, but were also a means of re-sifting society, and admitting only those who were deserving into the educated body of the country. He was convinced that many night schools failed from the want of proper teaching.

The Rev. Mr. Suter, Mile-end, gave an account of night schools in his district; and Mr. Curry announced that at a night school in the neighbourhood of Poplar, 300 men attended, who paid their

fees, and were taught arithmetic and reading and writing.

It is very desirable, in connexion with this subject, that the facts connected with the night schools which have been already established, should be known; for the experience will be most valuable to those who are intending to make local experiments in the opening of such schools.

Mr. G. M. Murphy, of 55, Finchley-road, writes to the *Star*, to mention that, for the last seven winters, he has, on two nights in the week, conducted large classes of adults; and this gentleman thinks that, if large classes of men and women are to be educated,—and thousands of them are conscious of their need of teaching,—it can only be done by much less of formality and simpler machinery than is generally thought sufficient for the purpose. The classes referred to by Mr. Murphy are conducted in Hawkstone Hall, Waterloo-road, on Wednesday and Friday evenings at eight o'clock. The teachers are working people. The instruction is free. The men and women are in separate classes, although in the same room. There has been only one case of misconduct calling for expulsion. Class-teaching closes at half-past nine, when an address is given on some interesting subject; or, occasionally, the time is occupied by reading some interesting paper, or in singing. The evening is closed by a short devotional service; but persons who object to attend this service are not obliged to do so. The average attendance last winter was sixty, and the expenses incurred only amounted to 11*l.* 0s. 6d.,—a very small sum in comparison with the opportunity which is thus afforded of doing a considerable amount of good. Mr. Murphy is of opinion that less advantage would have been derived if the teaching of children,—that is, those of twelve or thirteen years of age,—had been conducted at the same time with those of older age. An opinion founded on the experience of seven years is worthy of the most careful consideration; but it is feared that instruction of a practical kind during only three hours of each week, and that only during the winter months, will be a slow means of providing against the difficulties of a greatly neglected education. Moreover, while acknowledging the need there is for teaching those who are over nineteen years of age, we maintain that there is a far wider field which needs to be skilfully and energetically worked in connexion with lads of from twelve to seventeen or eighteen years of age.

The immense size of the metropolis, the peculiarities of its population, and other causes, make social matters of this kind difficult to work. There are a few excellent night schools in London to which we may hereafter more particularly refer; for such schools are hidden in the multitude of educational and other establishments, and do not meet with the attention which they deserve.

MR. LAYARD ON THE HISTORY OF ART.

AT the Lambeth School of Art last week, Mr. Layard, M.P., delivered an address on this subject. True art he defined to consist in a perfect appreciation and combination of form and colour. Some nations had one, some the other; but without a combination of the two no nation had ever been great in art. The arts of a nation depended on the character of a people, and represented its characteristics and peculiar circumstances, and his first illustration was drawn from the dissimilarity of Assyrian and Egyptian art. Egyptian art, in its massive invariable character, corresponded to the character of an exclusive, unchanging *caste* people, possessing unlimited command of stone materials; while, on the other hand, Assyrian art represented a conquering, ambitious people, given to assimilating the characteristics of the different peoples with whom they came in contact. From these two peoples the Greeks collected the chief features of their arts, and developed out those beautiful forms which were still the admiration of the world. The great specimens of Doric art were all clearly drawn from Egyptian models, and recent discoveries in Assyria had furnished a remarkable fulfilment of Niebühr's prophecy, that Ionic art would be found, some day or other, to have an Asiatic origin. The decay of art in Greece was contemporaneous with the decay of Greek freedom, as was the case in every other country in which art had flourished. Passing to Italy, Mr. Layard pointed out that Etruscan and Roman art was merely a reproduction of Greek art, and that architecture was the chief art by which the Romans were distinguished. Nothing gave a greater idea of their power than the magnificent public buildings which they had erected in their colonial cities, and which far exceeded anything this country had ever produced. The first great classic architect of modern Italy was Nicholas Pisano; the first great Christian artist was Giotto; and the basis of Italian art might almost be said to be the church of Assisi, the walls of which Giotto was called upon to ornament with passages from the life of St. Francis. The perfection of Christian art was attained almost by Ghirlandajo, though it could hardly be said ever to have been brought to perfection, owing to the decay of freedom which followed the German and French inroads, and the rise of a false classical taste. Of modern schools, Mr. Layard touched chiefly on the English; and, after criticising severely our shortcomings in architecture as evinced in the National Gallery, the British Museum, and the House of Commons, and in sculpture as shown by our public statues, he drew a hopeful picture of the future which English art and art schools had before them in applying the principles of form and colour to the new materials of iron and glass which had been brought into use, and to the structures, such as the railway stations, the great warehouses, and the Crystal Palace, which the wants of modern civilization and commerce were calling up on every side.

COMPETITIONS.

Bolton Town-hall.—At a meeting of the Town-hall committee on the 10th, accounts were passed amounting to 78*l.* 15s. 11d., including 60*l.* to Professor T. L. Donaldson—charge for report on competition plans for Town-hall. It was then resolved that of the six sets of designs selected by Professor Donaldson, the author of the design numbered 24, and bearing the motto "Experientia docet," is entitled to the first premium of 120*l.* That from the same selection, the author of the designs numbered 26, bearing the motto "Utile dulci," is entitled to the second premium of 80*l.* That also from the same selection, the author of the designs numbered 3, and bearing the motto "Manchester," is entitled to the third premium of 40*l.* It was also resolved that the authors of the designs numbered respectively 24 and 26 be jointly engaged as the architects for the erection of the Town-hall, but subject to such conditions as the council may annex to their appointment. Professor Donaldson, it will be remembered, had placed No. 24, No. 3, and No. 25 for the first, second, and third premiums respectively. When the committee took up their report to the town council, the council tried to find on what grounds or in deference to whose superior opinion the committee had advised a departure from the referee's decision, and not being satisfied on this head, very properly refused to ratify the report, and sent it back to the committee for reconsideration. A long and animated discussion took place at the meeting of the town-council on Wednesday. The question was introduced by an influentially-signed memorial, disapproving of the increasing expenditure of the borough; and a resolution was passed that 50,000*l.* were sufficient for the building complete, including site, cost of erection, and fittings; and this was carried by the chairman's casting-vote. A further amendment, however, was adopted, referring the whole question of site, &c., to the Town-hall committee, to report to a future meeting of the council. The subject of awarding the premiums for the three best sets of designs then came under consideration. The committee, at a meeting on Monday, had passed a resolution, "That inasmuch as, by the instructions, architects, in sending in designs, are requested not to exceed 40,000*l.* as the cost of the building complete, this committee determines that no premium be awarded to any architect who does not give satisfactory proof to the committee that the building, according to his design, can be erected for a sum not exceeding that amount." This resolution was laid before the council for confirmation; but there being a slight difference between the resolution on the minutes and that actually adopted by the committee, which had only reference to the six architects whose designs had been selected giving satisfactory proof, &c., the minutes were negatived by unanimous consent. The entire question of the premiums is therefore in a state of uncertainty.

The Sir Tatton Sykes Memorial.—We mentioned last week the name of the successful competitor for the design for this memorial. We can now add there were about 150 designs sent in; and that the second premium, 10*l.* was awarded by the committee to Mr. E. A. Heffer, architect, of Liverpool, for a pair of designs, one being an obelisk, and the other a column; the obelisk having recumbent dogs at the faces of the pedestal, and the column having lions at the angles.

A ROYAL IMITATOR OF JOHN HOWARD.

IF we may judge from the following, there is great hope that the Emperor Maximilian will work much good in his Mexican dominions. From an order addressed by the emperor to the director of the Mexican prisons, it appears that the emperor, during the course of a journey into the interior, adopted the praiseworthy course of making use of his own eyes; and, amongst other matters, inspected the condition of the prisons, which at this day appear to be in much the same state as the English prisons were when they were described by John Howard and Oliver Goldsmith, a century or so ago. The emperor desires information of the moral and material state of the prisons, and of the persons detained there; also information respecting the kinds of employment, and the religious and secular education provided, the extent of these establishments, *the size of the dormitories with respect to the number of prisoners, and also the state of the ventilation and the cleanliness of those apartments;* also whether the prisoners are well fed and clothed. The inspector is to listen with attention to the complaints of the prisoners, and to make all inquiries necessary to ascertain if their grievances are well founded, in order to redress them as speedily as possible; the inspector is also called on to devise the means of immediate remedy, while measures are being taken, to carry out a thoroughly improved system of prison discipline; "and," says the emperor, "as the stay of children in the prisons, with their parents, witnessing examples which are highly corrupt, is most prejudicial to the young, you will take care that they do not remain there under any pretext. You will take care also, that the very young prisoners are, wherever this is possible, in a department separated from the rest, in order to prevent them from being still further corrupted by the contact of individuals who have grown old in crime."

FRANCE.

FOR the last two years a considerable modification has taken place in the pavement of the Paris boulevarts, quays, and other great thoroughfares, by diminishing the width of the macadamized portion, and enlarging the stone roadway on each side. This has been attended with a considerable economy in the maintenance of the streets, the macadamized roadways having cost the towns enormous sums to keep in repair. Perhaps this is mainly owing to the departure from the right principles of a good macadamized road, as it is evident that gravel and sand mixed with water to the consistence of cream is only fit to be swept into the gulleys.

It was announced a few days ago that the commission appointed by the Minister of Public Works to consider the improvements in railway traffic had recommended the adoption of the American system of carriages. This was a mistake: a special commission was named to examine in detail the numerous inventions of this class communicated from time to time to the Minister of Public Works. Of these very few, unfortunately, are capable of practical adaptation, and the sub-committee, so far from recommending passenger-carriages with a continuous communication throughout the train, has pronounced against them.

It is very probable that a rectification or straightening of the Paris and Lyons Railway will shortly be carried out, in order to quicken the transit between Paris and Marseilles. When the general group of railways in France was approved of, local and personal interests prevailed to such an extent that the most direct or most economical line was not always followed.

INDUSTRIAL EXHIBITION FOR WAKEFIELD.—Preliminary measures are being taken to hold a working men's industrial exhibition at Wakefield.

HANDEL COMMEMORATIVE WINDOW.

ST. MARY REDCLIFF, BRISTOL.

SOME time ago, on the occasion of a musical entertainment in Bristol, commemorative of the first centenary after Handel's death, a number of gentlemen there, including Mr. William Powell, Mr. W. Proctor Baker, Mr. William Proctor, and others, determined on setting up a window in memory of the great composer, in Redcliff Church. Some little delay occurred, but ultimately three artists were invited to submit designs, from which one by Messrs. Clayton & Bell was selected. This has been executed, under the direction of Mr. Godwin, and is now set up at the east end of the north aisle of choir.

The glass is designed in pointed allusion to Handel, by setting forth eight incidents to which he composed music in his "Messiah," thus:—At the base of the window, on the left hand, is illustrated the passage, "Behold, a virgin shall conceive:" above this is treated the passage, "Unto us a child is born." The subjects follow on in the other lights in this order:—"There were shepherds watching:" above this, "He shall feed His flock;" "Behold, and see if there be any sorrow like unto His sorrow:" above this "Surely he hath borne our griefs;" "He was cut off out of the land of the living:" above this, "Thou didst not leave His soul in Hell." The whole of the openings in the tracery are filled with angels, singing and playing "Alleluia." Groups of angels also take the place of canopies and divisional members in the lower lights, and by these the Handelian spirit of the design is sustained by their musical scrolls being inscribed with the music of the composer's great work as it applied to the incidents above enumerated. At the base of the window is the following inscription:—"In Memory of Handel. Erected 100 years after his death."

The window is one of the most successful works of the artists. Some parts of it, for example, the head of the Saviour (bearing the cross), may fairly be described as beautiful.

DESTRUCTION BY FIRE OF THE THEATRE ROYAL, EDINBURGH.

ON Friday in last week, about four p.m., a fire broke out in the Theatre Royal, Edinburgh, at the head of Leith-walk, which, within an incredibly short space of time, destroyed the entire building; and, in the falling of the walls, knocked down the cloister and part of the main building of St. Mary's Roman Catholic Church, and caused the loss of six lives. The disaster has caused a gloom in the city of Edinburgh, deepened by the loss of the well-known and much-respected architect, Mr. George Lorimer, Lord Dean of Guild, who fell in the discharge of his public duty.

The Theatre Royal, formerly the Queen's Theatre (until the name was transferred from the old Theatre Royal, in Shakspeare-square, removed some time ago to clear a site for the new General Post-office), was opened only nine years since. It occupied the site of the Adelphi Theatre, which was destroyed by fire in May, 1855.

The fire originated, it would appear, in the top shifts of the scenery, which were so badly protected that on several occasions they had taken fire, although in the previous instances the men had been able to extinguish the flame promptly by cutting away the drapery. In the present case, the gas-man, who had just been putting on the lights, at a subdued height, to be ready for the illumination of an early evening performance, had succeeded in lighting the second row of top lights, and was lighting the first when the drapery caught fire. The flames spread so rapidly that he was unable to get the border down in time, and rushed along the "flies," or wooden stages upon which the men walk when regulating the scenery, and called to his assistance the head carpenter, an assistant, and the fireman. These men had been adjusting the scenes for the pantomime when the alarm was given, and they at once used every possible means, by cutting down the borders and hacking away the side scenes, to prevent the fire spreading in the "flies." Meanwhile, the flames spread with almost incredible rapidity, and the scenes were in a few minutes in a sheet of flame; the wooden "grooves" and stagings aloft quickly caught the flames, and the fire was speedily roaring to the roof, fed by the draughts which open flames necessarily produce. So rapid was the conflagration that the few men in the house had barely time to escape, after they saw their attempts to extinguish the flames were hopeless. The fire, at its height, is reported to have been seen from Dunfermline, in Fifeshire, about 15 miles distant.

The flames, evidently stimulated by a great draught, broke fiercely through all the windows to Broughton-street, and raged for some time with great fury. From the state of the walls further danger was apprehended. A part of the south wall had been torn down in the fall of the roof, and the boxes and galleries having given way in a series of loud crashes, the side walls, which were 40 ft. to 50 ft. high, stood unprotected, and showing a great inclination outwards. The north wall particularly, overhanging the cloister of the Catholic chapel, was seen to be in a very threatening condition, and on this side already a sad and fatal occurrence had taken place. A little after five, one of the chimney-stacks of the theatre fell outwards, and smashed in the cupola and a large part of the roof of the cloister chapel. A good many people were in this part of the chapel at the time, as it afforded a point for operating on the north side of the burning building. In the fall of the chimney, two men in the cloister were struck down. An old man, who had for eighteen years been in the fire brigade, was killed on the spot; a young man, a clerk in a painter's establishment, was thrown down with a great stone on his back. He called loudly and piteously for help, which could only be rendered by others at the greatest peril, for the north wall threatened every moment to give way. Several men courageously endeavoured to get him out. One of the most active in the benevolent and heroic labour was the Dean of Guild. He felt confident in his own calculations for his safety. He was repeatedly called to come away; but his reply to one was, that he knew the theatre walls well, and that they would not give way; and to another, who urged him still more earnestly, that he would rescue the man at the peril of his life. The fire-master, Mr. Mitchell, who had been observing the increased deflection of the wall, conjured Mr. Lorimer to yield, and even tried to drag him away. In a second or two the greater half of the north wall fell with a terrific crash. Mr. Lorimer and three others were in the act of escaping when they were overwhelmed in the ruins. A number of gentlemen, who were in the lobbies of the chapel, lost no time in making an effort to get at the buried men; and, under the direction of Mr. Nichol, architect, they, along with a body of labourers who were immediately called in, proceeded to remove the *débris*, getting into the cloister by a private door leading from a room underneath the chapel. The men wrought with great earnestness, but it was not till ten o'clock next morning that the site of the cloister was finally cleared, and the number of persons killed ascertained to be six, including the two first struck down. The north wall in falling broke through a large portion of the roof of the church, besides destroying some of the parapets and pinnacles.

The Theatre Royal, or Queen's Theatre, was opened in December, 1855. It was built from a design by Mr. Bryce, Edinburgh, and had 1,700 seats, having three tiers of boxes and galleries. The front lines of the different tiers formed a semicircle with an ogee curve outwards, while the stage-boxes within the Corinthian columns of the proscenium curved inwards. The stage was from a design by Messrs. Grieve, Telbin, & Co., and might be opened up from the footlights to the wall to the depth of 58 ft. The breadth of the proscenium was 32 ft.; and as the height from the stage to the roof was 54 ft., scenery could be drawn upwards out of view of the house, or below into the area of 22 ft. below the stage. There were ten dressing-rooms, besides green-room, property-room, store-room, workshops, &c., and ladies' cloak-room in connexion with the audience department. The theatre had for the last few years been in the hands of Mr. and Mrs. Wyndham. We understand that the loss is for the most part covered by insurance, both on the part of proprietors and manager, but one office at least had declined the insurance some time ago on account of the want of protection of the top-shifts against fire.

The late Mr. Lorimer was justly esteemed for his sound practical talents and high personal character. In November last he was appointed to the office of Dean of Guild, or by ancient courtesy Lord Dean of Guild, with a seat in the Town Council, in which he had previously served for three years as a Common Councillor. In his official capacity he was convener of the Fire-engine Committee, and was always sent for on the occasion of fire breaking out. Mr. Lorimer, whose life is said to have been largely insured, was in his 54th year. At a meeting of the magistrates, on Saturday, it was unanimously resolved to ask leave for the magistrates and Council to attend the funeral in their official capacity, and the Guildry intended to make the same request.

It is rather remarkable, that of all those killed only one did not belong to the building trades. The list is as follows:—Mr. George Lorimer, Dean of Guild; Mr. John Taylor, builder; Mr. Thomas Henry Leeke, clerk to Mr. Tod, painter; John Clark, mason, and who had served eighteen years in the fire-brigade; Bernard M'Vie, labourer; George Sweeney, gentleman's servant.

The procurator-fiscal was instructed to take out warrant for removal of dangerous walls, and adopt any other measures necessary for the public safety.

CONDITION OF STIRLING, SCOTLAND.

THE provost of Stirling, Mr. John Murrie, writing with reference to our articles on that town, says:—"At a recent meeting of the police commissioners last week, regarding certain improvements in our town, I brought your remarks before the meeting. Whilst I admit a number of them to be correct, and which I desire to carry out as speedily as possible, there are others which are erroneous; but I do not find fault with you, as very much would depend upon the parties from whom the information was obtained. I, as well as a number of the magistrates and commissioners, have been most desirous to introduce the New Police Bill, which would rectify much that you deprecate, but we have twice been thwarted; yet you make us all appear as if we opposed reformation and cleanliness. I sincerely trust your strictures may be the happy means of aiding us to carry on the many improvements required in our town."

It will be a cause of extreme gratification to us should it prove so. It is to such ends alone that our labours are directed; and with a chief magistrate holding such views as those expressed by Mr. Murrie, we may fairly anticipate changes for the better in the ancient and picturesque town of Stirling.

"LAST WINTER IN ROME."

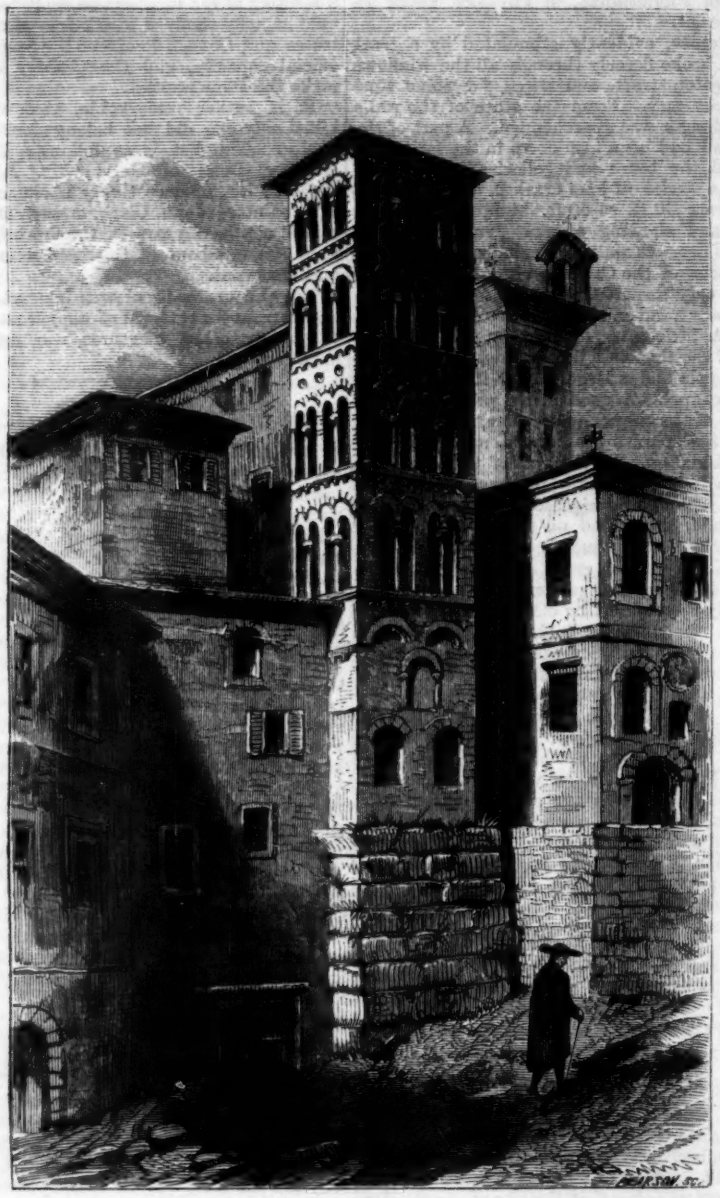
THESE words have a pleasant sound, especially to those who have spent a winter in the wonderful city, serving to recall what most have found a happy time; and Mr. Weld's book, of which they are the title, will be found pleasant too, as well as instructive.* It is not a guide-book; says nothing of the stock antiquities and works of art to be found there; but sets forth in an agreeable and piquant way the condition of Rome during the year, and what was said and done there, with many scholarly and apposite references. The more recent works are mentioned; one of them thus:—

"Whew! what is that vile erection deforming the Piazza di Spagna, which has sprung up since we were last in Rome? We approach a pillar of Cippolino marble, reared in front of the Collegio di Propagandâ Fide, and read that it has been erected by Pope Pius IX. in commemoration of the dogma of the Immaculate Conception, established by his Holiness in 1854. Erected too, it might be added, to testify the low state to which art had fallen in Rome. The Cippolino shaft, fine in itself, is entirely spoiled by trumpery bronze tracery, which, in the form of lattice-work, coats a considerable portion of its base. Turning away vexed and disquieted, we pass at the foot of the steps leading to the Church of the Trinita di Monte, observe that the quaint old boat-shaped fountain is sadly in need of repair, and that the broad steps leading to the church are no longer the resort of artists' models."

Of the investigations by Father Mullooly, at San Clemente, of which we have spoken at some length on various occasions, an interesting account is given. The great marble wealth of Rome struck our author as it does most persons, especially on visiting the museum in the Collegio della Sapienza. In this institution, placed in glass cases, are no less than 607 specimens of various marbles and alabasters used by the ancient Romans. It is, indeed, only by examining these that you truly realise the magnificence of that people in their buildings.† Many

* "Last Winter in Rome." By C. R. Weld. London: Longman, Green, & Co. 1865.

† This collection was made and arranged by the late Professor Sanguinetti, a gentleman of great scientific acquirements, and professor of mineralogy in the college. Many English families, who have benefited by Professor Sanguinetti's instruction in Rome as an Italian master, will learn with regret that he fell a victim to fever in the spring of last year.



CAMPANILE OF THE CHURCH OF SS. GIOVANNI E PAOLO, ROME.

varieties are so beautiful that they seem like precious stones; and so indeed they are, for we know that the Romans incurred enormous expense in quarrying and conveying them from distant parts of Africa. Among the most beautiful marbles are Verde Rannocchia, Breccia Verde di Settebasi, Rossastra, Pavonazzetto, Africano Principe, Africano Rose, Giallo antico (che ha sofferto l'azione del fuoco), Lavagna Antica di giallo, Basalto di bronzo, Breccia a seme santo; and of the thirty-one varieties of alabasters, Corallino, Fiorito a pecorella, Occhi, Rosa, Giallo, Verdognolo, Sardonico, and Chiaro may be especially cited for their curious markings and exquisite hues. Looking at this unique collection, you can well understand how, ruined as Rome has been by earthquakes, conflagrations, and the effects of time, there are still thousands of marble columns in her churches and palaces, and who shall say how many underground? Good yielding veins of fragmentary marbles run parallel to the Appian and Latin ways. Near the aqueducts you are also likely to find several varieties; for these "camels of the Campagna," as they have been called, rough in their exterior when far from the city, were often clothed in marble when near Rome, that they might be in keeping with the architectural grandeur of that city. Perhaps, however, the richest quarry lately opened is that around the recently discovered Villa Livia. Mr. Weld advises marble hunters to be provided with a sponge and a bottle of water, in order to wash the surface o the marble fragments, for often a piece that coated with dirt seems worthless, turns out on being cleaned to be rare and beautiful; and, on the other hand, what appears rich hued may be only stained by vegetable matter.

The works of Michelangelo impressed him greatly:—

"It is only in Rome that you become really aware of the greatness of Michelangelo. Desirous of studying and understanding the works of that great master, I devoted several days to an examination of the sculptures and paintings by him in that city. The impression left on my mind is, that the works of Michelangelo are stamped with the characteristics of unity of thought, sublimity of conception, and a grandeur of design possessed by the works of no other artist. Goethe observes: 'In design the soul gives utterance to some portion of her inmost being; and the highest mysteries of creation are precisely those which rest entirely on design and modelling; these are the languages in which she reveals them.'"

Mr. Weld has the impression that life was in much more danger last year in Rome than was generally supposed, and gives evidence in support of his view. Everything is ill managed. Feelings of the deepest discontent prevail, and the "National Committee" are active and urgent. Science is at a stand-still; justice a farce. He calls attention, and not before it was necessary, to the miserable state of the Pantheon, foul without and filthy within: no pains seem to be taken to preserve it from corroding influences.

Of the statue of Augustus, found amidst the ruined walls of the Villa Livia, Mr. Weld says,—

"Among the numerous masterpieces of sculpture which arrest your steps, as you pace the halls in that treasure-house of art, this statue holds the highest rank. It represents Augustus as he has been made familiar to us by history, the type of a man who possessed the rare tact of exercising absolute power over a people who, though jealous of their freedom, became not only his willing but also his grateful subjects. Psychologically similar in many respects to the first Napoleon, who had the power of moulding multitudes to his will, the countenances of these men bear a great similarity, especially in the prominence of their chins, and the massiveness of their foreheads.

Ancient sculptors were always extremely careful to embody whatever attributes appertained to the subjects of their statues, and which were at all likely to identify them. Thus, the statue of Augustus is highly emblematic of the man, but the various insignia with which it is covered, and its great artistic merit, can be only properly seen and appreciated by viewing it by torchlight. I saw it twice by this light, and on the last occasion was even more struck by its excellence than when I first examined it. And I have entertained a higher idea of the æsthetic taste of the Pope, since hearing that his Holiness spent an hour before the statue last winter, seated at a small table, on which was placed hot coffee—a great luxury on a winter's evening in the Vatican—an attendant meanwhile exhibiting all the excellences of the statue by means of a small light properly screened."

Mr. Weld sought to obtain leave for a company to search the Tiber, a desire that has occurred to others before him. The reason given for the refusal he obtained in an interview with Cardinal Antonelli was, that any derangement of the bed of the river would be certain to engender malaria. Some few slips are apparent in the work here and there, such as "*chair*" for "choir" (p. 104), "*daff* leather" for "don leather" (p. 248), which we mention merely that they may be corrected in the next edition. The book is illustrated partly from Mr. Weld's own sketches. Here is one of them which we are enabled to present, a view of the most picturesque campanile in Rome. It is attached to the church of SS. Giovanni e Paolo on the Cælian, and is interesting as the base is formed of a portion of the Temple of Claudius. You cannot mistake this, for it consists of enormous blocks of travertine, into which the masonry of the tower is built. The tower dates from the twelfth century. Beneath the church is a vivarium, where it is supposed the wild beasts were confined before being introduced into the arena of the Colosseum. It is not possible at present to penetrate through the passage to the Colosseum, as it is choked; but there is every probability that it might be easily opened so as to admit of being explored throughout its entire length. Shafts were pierced in the rock to admit light, and a pool of water is still shown where the beasts are said to have slaked their thirst. Adjoining the vivarium are various large arches, forming vaulted chambers, in which prisoners destined for martyrdom in the Colosseum are stated to have been confined. But all this is mythical.

We must break off here, but our readers will probably think that we have given sufficient evidence that "Last Winter in Rome" is a book to be read.

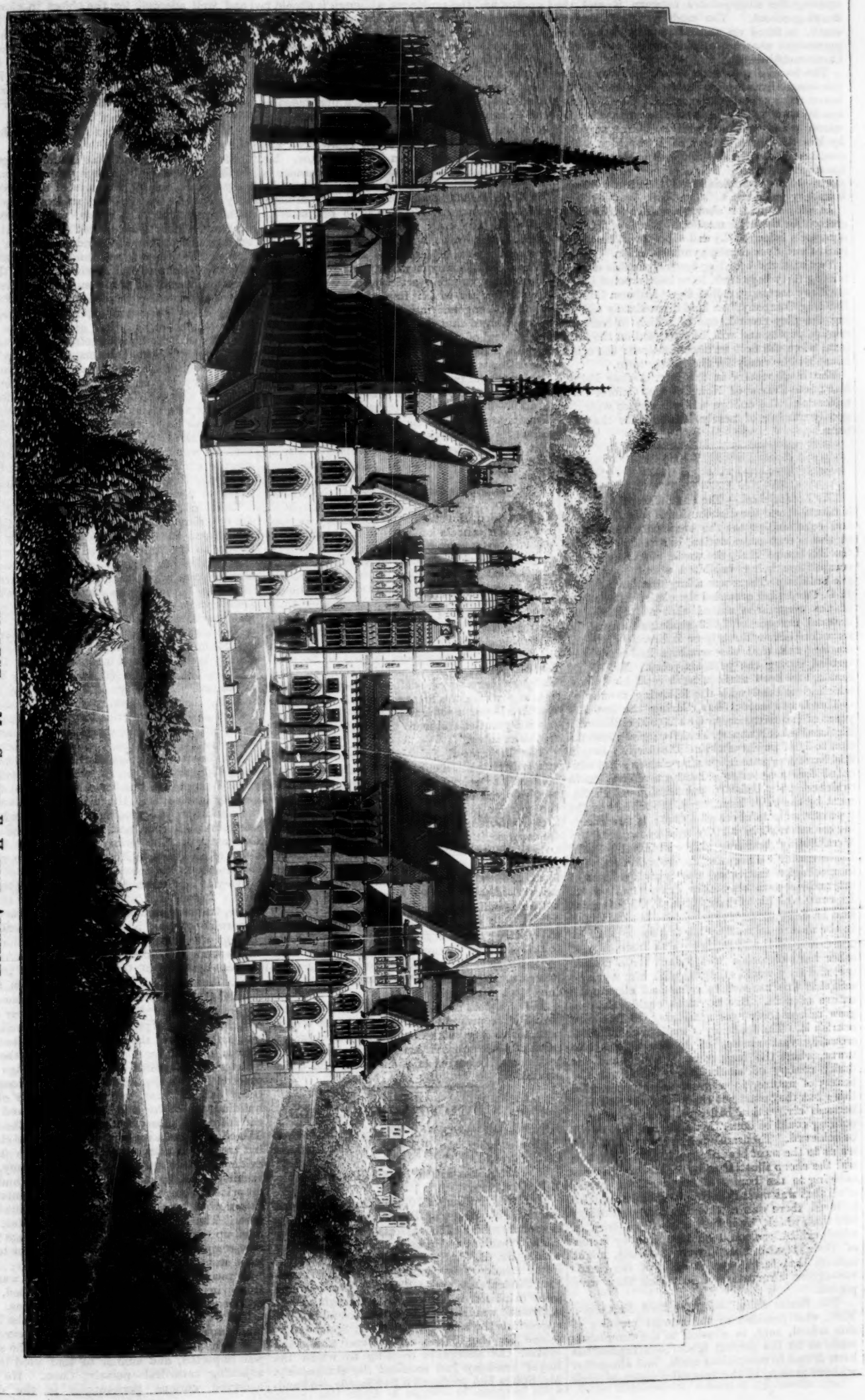
MALVERN PROPRIETARY COLLEGE.

IN our present number we give a general view of the new Proprietary College at Malvern, just completed from the designs of Mr. Charles F. Hansom, of Clifton. We purpose, in a future number, to give plans of the two principal floors, and an enlarged elevation of entrance-tower, which is the principal feature of the building.

The college is situate on a gentle slope, at the foot of the Malvern hills, a little to the south of the village, and commands beautiful views of the Worcestershire valley on the east, and of the far-famed range of hills on the west.

The college contains all the necessary accommodation for 600 boys, with ample provision for a full staff of masters, secretary's offices, board-room, etc., etc. The plan is in the form of the letter E, the eastern side being left open, to secure ample light and ventilation to every part. The west, or principal front, is 210 ft. long; the north and south fronts 140 ft. The entrance-tower is in the centre of the west front, 35 ft. by 25 ft., and 100 ft. high, flanked by a low range of buildings on each side, which connect it with the wings, in which are waiting-rooms, secretary's and clerk's offices, master's rooms, etc. The board-room and library are immediately over the entrance-hall, above which are the museum and clock chamber.

The north and south wings are devoted to class-rooms on the ground floor, all entered from spacious cloisters running round the interior of the building. At the four corners of this cloister are stone staircases, leading to the upper floor, on which are the principal school-rooms, 97 ft. by 35 ft., and 57 ft. high. The classical school



MALVERN PROPRIETARY COLLEGE.—MR. CHARLES F. HANSOM, ARCHITECT.

on the north can be increased to 135 ft. long, by opening the sliding-doors between it and the drawing-school. The modern school, on the south, is fitted up as a temporary chapel, the permanent one shown in the view not having been erected as yet.

The basement extends about half-way under the wings, from which access is gained to the lower terrace and play-ground. On this floor are lavatories, closets, and the apparatus for warming and ventilating the buildings, supplied by Messrs. Haden & Son, of Trowbridge. The contractors for the building were Messrs. Warburton, Brothers, of Manchester, the cost being about 16,500*l.*, exclusive of furniture, roads, boundary walls, &c.

In addition to the above, a residence has been erected for the head master, at a cost of 2,500*l.*; a porter's lodge, 450*l.*; and shortly will be added racket and fives courts, gymnasium, &c.

Two masters' boarding-houses, capable of containing forty boys each, have been erected by an auxiliary company, called the "Malvern College Building Company," on land immediately adjoining the play-ground, one of which is ready to receive pupils, and will be occupied on the 25th inst., when the first term commences: the other house will be ready for the Easter term.

The head master is the Rev. Arthur Faber, M.A., late Fellow of New College, Oxford. We understand the college will commence with the goodly number of nearly 100 boys for the first term.

SCHOOLS OF ART.

The Leeds School.—The annual meeting of this institution, and the distribution of medals, prizes, and scholarships to the successful candidates at the recent examination, has taken place in the Mechanics' Hall, the works of the successful competitors being exhibited upon the walls of the building. There was a large audience. Lord F. C. Cavendish occupied the chair. The report of the committee stated that at present the unusual number of 7,430 students received instruction either directly or indirectly from the masters, and that the numbers had more than trebled during the past six years. Mr. Walter Smith, the head master, next read his report, which concluded with the following summary:—The Leeds school has, during the last five years of its existence, taught 20,000 children in National schools at a nominal fee; given instruction to 5,000 pupils of the middle classes; taught 2,500 working men in evening classes; has educated four art-masters; has been referred to in evidence given before a commission of Parliament by the chief inspector of art-schools as the type of a successful school of art; is now carrying on art-work in all the great towns of the West Riding, teaching thirty National schools, thirteen middle-class schools, five evening classes in mechanics' institutes, two branch schools of art, and its own classes in the central school. In course of his address, Lord F. C. Cavendish said he believed that there had been implanted in the nature of man by his Creator, a taste for and a love of the beautiful. This taste, like all other natural tastes, was meant for a certain use, and they would all agree with him when he said that this use was to refine and elevate the nature of man. But no taste could exist and grow unless there was something to feed and nourish it. The tendency of modern civilization, crowding vast masses of human beings into towns, where the long rows of streets and the dusky canopy of smoke above shut out the beauty of nature, to a great extent prevented this; but they must not sit down and think that because civilization had certain disadvantages, nothing could be done. Marvellous things might be achieved. Thousands might be sent by cheap trains to the most beautiful parts of the country; and the cheap illustrated books and prints were carrying to the homes of many artisans copies of all that was most beautiful in art; but still he believed there was a wide field for institutions like that, which, by means of their galleries, in which exhibitions could be held, and by means of their teaching in popular schools, might nourish that taste, even in spite of the disadvantageous circumstances in which they were placed.

The Exeter School.—Sir Stafford Northcote, M.P., who presided at the annual meeting of this school, said, in allusion to the complaints made as to the central school:—Attention has been drawn to complaints made, not altogether without reason, of the unequal division of funds between the central institution at South Kensington and the provinces, although it should be considered that the institution had an immense influence upon the country. He believed that a great deal more would in a few years be effected in disseminating the advantages of the central institution, although more was being done than some persons perhaps were apt to think. Expensive foreign works of art had been purchased by the Government at large prices; and these had been lent, or copies or casts had been made of them, so that they had been reproduced and rendered saleable at prices fabulously low. Mr. Cole mentioned to the committee an instance in which a majolica plate, originally purchased by the State for 200*l.*, was lent to Messrs. Minton, and had been reproduced so as to sell at 35*s.*: and when the copy was compared with the original, there were hardly any members of the committee who professed to know which was which. In this way it would be sought to circulate those valuable articles that would create a taste for art which fine works of art were capable of engendering. It must, therefore, be acknowledged that South Kensington was doing a great deal of good in the country. Mr. Cole had suggested a plan of organising a system under which fine works of art could be lent from the great national institutions centralised in London to the different provincial museums for limited periods. The more the department of South Kensington was stirred up the better, and he did not regret having been on the committee that had called them to account for having monopolised too much of the Parliamentary grant.

The Kidderminster School.—At the annual meeting of this school, Sir John Pakington, M.P., who presided, thus spoke of the ruling authorities of the schools of art:—"I am not one of those, as you may perhaps be aware, who are very enthusiastic admirers of the Committee of the Council on Education. But I must, at the same time, say that I think the encouragement which they have on the whole given—which that department of the Committee of Council intrusted with the conduct and management of these schools of art has given to the cultivation of art in this country—is highly to be commended; and I cannot help thinking that although there may be defects in some respects, yet, as a whole, the management of the Science and Art Department has been such that it has given a great stimulus to the cultivation of art in this country."

The Birkenhead School.—A meeting of the subscribers and friends to this school has been held at the school, Hamilton-street, in order to receive from the committee explanations as to the present position of the school, and to take such measures as might be thought desirable for carrying it on, provided sufficient funds could be raised for that purpose. Mr. John Laird, M.P., presided. The chairman said it had been found necessary to call that meeting because the amount of fees received from the students had not been sufficient, under the system hitherto adopted, to meet expenses. He thought they must, under the circumstances, look to the town to provide 130*l.* a year in subscriptions to carry on the school in an efficient manner. A committee was appointed to endeavour to carry out the object of the meeting.

The Sheffield School.—The council of this school have presented to Mr. Benjamin Wightman, for twenty years the honorary secretary, a mark of their appreciation of his services. The testimonial consisted of a silver tea and coffee service.

THE ARCHITECTURAL ASSOCIATION.

THE usual meeting of members was held on Friday evening, the 6th inst., at the House in Conduit-street.

The chair was taken by the President, Mr. J. H. Christian.

Mr. J. T. Hanson, of 10, Old Jewry Chambers, and Mr. W. Wade, of Dean-street, Soho, were elected members of the Association.

The President called attention to the drawings which Mr. R. P. Spiers had submitted to the Royal Academy in competition for the Travelling Studentship and Gold Medal, and which were exhibited in the room. Although he (the chairman) was a Gothic man, he could not but appreciate the affection which Mr. Spiers entertained for the Classic school, and which had evoked the admirable drawing to which the Royal Academy had awarded the studentship. Mr. Spiers had produced a fine façade,—a handsome group, and a plan which was at once simple and well adapted for the object in view. The subject selected for illustration was not an easy one; and when the very short time which Mr. Spiers had devoted to his drawing was taken into consideration, the success which he had achieved was the more remarkable. He thought the Association ought to congratulate Mr. Spiers on the very creditable manner in which he had competed for the prize of the Academy.

After a few words from Mr. J. D. Mathews, to the same effect,—

Mr. Spiers observed that the advantages held forth by the Royal Academy were not so generally understood by students of architecture as they ought to be. All that was now required to gain permission to compete, was to send in a drawing, which, if considered of sufficient merit, entitled the author to be admitted as a probationer. The design to be submitted for a studentship now occupied but twelve days in the preparation instead of three months as heretofore. For the travelling studentship of 100*l.*, but thirty days' work was required. He regarded these prizes, as also that given by the Royal Institute of British Architects, as most valuable, because they afforded the many means by which young architects could get their ideas on paper before they got into practice. There were, he believed, about 2,000 architectural students in the metropolis alone, and yet last year but three out of that large number offered themselves as competitors for the gold medal. He hoped that students would for the future exhibit a spirit of greater emulation in this respect, and thus encourage the Royal Academy and the Institute to do yet more for the profession.

The Chairman said that until he had heard the statement of Mr. Spiers, he was not aware of the altered rules of the Royal Academy in reference to the prizes offered by them for architectural designs. The subject, however, was one of such great importance to students of architecture, that he hoped the Association would take some means to make the regulations of the Academy familiar to its members.

Mr. Lacy W. Ridge (hon. secretary) then read a paper on Boxgrove Church, Sussex, which has already been described in detail by the Rev. J. L. Petit, the Rev. Mr. Turner, Professor Willis, and others. The priory of St. Mary the Virgin and St. Blaize, at Boxgrove, was founded by Robert De La Haye, the lord of the manor of Halnaker, or, as it occurred in some ancient documents, "Halfnaked," whose residence was in the immediate neighbourhood. The monks were of the order of St. Benedict, and were originally three in number. They were subsequently increased to thirteen, at which number the establishment remained until 1414, when it was reduced to nine, and remained so until the Reformation. The priory was subject to the abbey of St. Essay, in Normandy, but was within the diocese of Chichester. The village of Boxgrove was four miles north-east of the cathedral town. It consisted at present of a low central tower, transept, and one double bay of the nave. The ruins of the latter extended beyond the present west wall, the whole foundations of which were uncovered in 1858, when the Archæological Institute of Great Britain and Ireland visited the spot. The excavations then made showed that there were five more double bays towards the west. There did not appear to be any record of the precise date of the building, but, judging from the style of the architecture, it was erected most probably within the last quarter of the twelfth century. Mr. Ridge then proceeded, with the aid of the drawing-board, to point out the most interesting details of the building, which he said he had measured very carefully, and subsequently sketched on the spot. The church was a conventual building, of simple but tasteful construction; and although it was evidently built with a view to economy, the architect had, by judicious proportions and appropriate though not costly ornamentation, shown that he thoroughly understood his business. The walls were faced with flint, and filled up with rubble; but as the dressings were now completely coated over, he could not tell of what stone they were composed.

A member observed, that as there was no stone in the immediate neighbourhood, the dressings were probably of Portland stone.

The Chairman said, he did not think the Portland quarries were known in the twelfth century. It was, he thought, more probable that the stone was imported, and similar to that used in the adjoining cathedral—namely, Caen. He also observed curious perforations in the doors

(which opened outwards) forming a sort of grille, which were ornamented, but for the use of which he was at a loss to account, unless they were intended to give alms through.

A member here remarked that precisely similar openings were to be found in the doors of an old red brick house (formerly a monastic building), with pointed roof, and very strong walls, near the village of Prittlewell, in Essex; the tradition with respect to which was, that the inmates had made a gallant stand against the soldiers of Cromwell, when on their "reforming" campaign, and had fired through the grille upon their assailants.

In reply to a question, Mr. Ridge said, that he had not been able to obtain any clue to the name of the architect who had built the church and priory of Boxgrove; but that the natural supposition was that they were the work of the same architect who had built the Cathedral of Chichester.

After some further discussion a vote of thanks was passed to Mr. Ridge for his paper.

THE ARCHITECTURAL EXHIBITION.

WE desire to call the attention of architects and others to the approaching Architectural Exhibition, which will open as usual in March; in the hope that we may lead them to contribute to it. The committee notify that,—"Although pictures in perspective are the most suitable, still absolute working drawings, merely put together on a strainer, or in a frame; details, mouldings, or parts of buildings, are all most desirable." Two *conversazioni*, besides the opening one, will be held during the Exhibition, and the committee want assistance in that direction also.

THE ARCHITECTURAL INSTITUTE OF SCOTLAND.

THE EDINBURGH ALBERT MEMORIAL.

AT a meeting of the Scottish Institute on the 12th, Mr. Seton, advocate, in the chair; Mr. Rodgers, the honorary secretary, read a letter from Mr. D. Cousin, urging somewhat strongly that the Institute had no right now to interfere in respect of site; and maintaining that it was not actually Arthur's Seat that was proposed for it, but a ridge quite distinct from what is properly so called. Mr. Leasels, Mr. Peddie, Mr. Thomas Stevenson, engineer, and several other gentlemen, spoke in condemnation of the proposal to make Arthur's Seat the site; and the meeting unanimously decided to memorialise the Committee of Advice, to that effect.

The following has been accordingly presented:—

"Petition of the Architectural Institute of Scotland," humbly showing:—"That at a numerously attended meeting of the Institute, held in the Hopetoun Rooms, Edinburgh, on the evening of Thursday, the 12th inst., it was unanimously resolved that the site on Arthur's Seat, named by the committee, is unsuitable for any monument, and that the erection on it of the Memorial to the Prince Consort would be inexpedient. That this meeting of the Institute was attended by a large number of influential citizens of Edinburgh, who were invited to take part in the proceedings, and who unanimously and cordially concurred in the opinion of the Institute; and the Institute is fully satisfied, from the statements of the press and otherwise, that this opinion is entertained by the public at large. May it therefore please the Royal Committee of Advice to take this petition into consideration, and to adopt such steps as may be deemed desirable to prevent the proposal above referred to from being carried into effect."

THE CROSSLEY ORPHANAGE, NEAR HALIFAX.

WE are requested to mention what, if we had been informed, we should certainly have stated in giving the illustrations of the orphanage—namely, that the original architect of the building was Mr. John Hogg, of Halifax. The alterations made by the architects who rearranged the interior, and completed the work, appear to have been confined mainly to the upper part of the building, including especially the clock-tower. Mr. Hogg appears to have just cause of complaint that his name was kept out of sight.

STRIKE AGAINST AN ARCHITECT.—At the moment of going to press we received a printed account from Mr. A. Waterhouse, of Manchester, of the treatment he has received at the hands of the Manchester Union Bricklayers. A hasty perusal seems to show that he has been treated scandalously. We must return to it.

BRISTOL SOCIETY OF ARCHITECTS.

AT the annual meeting of this society, held recently, Mr. E. W. Godwin in the chair, Mr. Chas. J. Phipps, hon. secretary, read the report, from which it appears the society now consists of 21 fellows, 18 students, 13 amateur members, 9 corresponding members, and the artist members of the Academy. The gentleman who has filled the office of president for two successive years, Mr. P. W. S. Miles, now retires, in accordance with the rules; and the council have elected their oldest member, Mr. Charles Underwood, to fill the office. The council desire to impress on the members generally the necessity of maintaining the library in an efficient condition, and would invite donations of books for that purpose. They have also under consideration a proposal for offering prizes to art-workmen. A balance-sheet of the receipts and expenditure since May last was presented, showing receipts to the amount of 46*l.* 4s. 8d., and expenditure, 46*l.* 13s. 8d.

The chairman referred to the present prospects of the society, and of art in this locality; and observed that one feature was now occupying the thoughts of a good many persons,—architects among others,—viz., the new Assize Courts for Bristol. If Bristol acted in the matter of those assize courts as she had hitherto acted in all matters of public interest, she would only add another bad mark to her name on the list of the cities of England. An opportunity was now afforded for Bristol to redeem all the bad things she had hitherto done, by erecting the assize courts on some suitable site to begin with, not to cramp them up where it was impossible for the angle of vision to take them in.

Mr. Charles Pooley read a paper on "The Crosses of Gloucestershire," which was illustrated by a number of drawings of ancient crosses to be met with in different places in the country, amongst them being representations of those at Bisley, Calmsden, Cirencester, Lydney, Clearwell, and Aylburton, contrasting with the high crosses of Gloucester and Bristol, and the preaching cross at Iron Acton.

A BRISTOL NEW CLOTH WAREHOUSE.

THE establishment of Messrs. Crowe & Co., clothiers, adjoining Colston's-hall, Host-street, is a very extensive one. The cloth room is 90 ft. by 24 ft.: a staircase in one direction leads to the cellars, and another flight of steps conducts to the made-up goods or stock-room, which is 150 ft. in length and 26 ft. in width, and the fittings here are of mahogany and pine, French polished, and supported by bronze standards. The cutting-room, which is immediately over the stock department, is about 150 ft. long by 25 ft. broad, and contains accommodation for some forty cutters. Attached to this room is a ponderous cutting-machine, which in a separate compartment will be worked by steam-power. The trimming-room, an apartment adjoining, is 50 ft. by 25 ft., and fitted up with a great number of shelves and drawers. The out-workers' apartments have separate entrances and places of exit; and there are also in this part of the building a cash office, and a room in which the goods manufactured out of the premises can be examined, whence they may be removed to the brushing-room, and then deposited in the stock-room. The large work-room, capable of accommodating between 400 or 500 hands, is directly over the stock-room, and is similar in extent to it. Upwards of forty sewing-machines, driven by steam, are here ranged, and also great lengths of tables. There are immense stoves for heating the irons used by the tailors, and likewise a considerable quantity of shafting for working the machines. By a very simple arrangement—the invention of the architect—the sewing-machines are put in and out of gear, and the stitches can be regulated so that a machine will work very slowly, or produce 500 stitches per minute. Adjoining the apartment just noticed, is a room, 50 ft. by 30 ft., to be used for the manufacture of juvenile clothing. The whole of the different apartments are approached by a fireproof staircase. Above the staircase is fixed a tank, nearly 20 ft. square, which will be required in working the hydraulic machinery, and will contain a general supply of water for the building. Extensive and improved lavatories, &c., are on each floor. In the cellar is an enormous gas-meter, for the supply of 500 lights. The whole of the building is ventilated by a shaft in connexion with the engine-chimney, and which is capable of carrying off about 6,000 cubic feet of air per minute. The place is warmed by steam. There are about 140 windows in the whole building. Attached to the business premises is a dwelling-house, with an entrance from Trenchard-street, to be occupied by some of the clerks, a housekeeper, &c. Mr. Masters, of Bristol, was the architect, under whose superintendence the work has been carried out. This gentleman also designed the extensive premises of Messrs. Walsh, clothiers, Quay-street, which have been recently erected. The following tradesmen executed the work:—Mr. M. Kingstone, mason; Messrs. Eastabrook & Son, carpenters and joiners; Mr. D. Taylor, plasterer; Mr. J. Palmer, plumber and glazier; Mr. J. Smith, smith; Mr. H. Harris, gas-fitter; Mr. E. Roach, engineer; Mr. R. M. Bryant, fittings; and Mr. J. Edbrooke provided the smith's work for the fittings.

NOTES FROM YORK.

A CORRESPONDENT writes,—The improvements in Little Blake-street, consist in laying out the cleared space of ground near the new Masonic hall with grass sods, and railing it off with a sort of Gothic open rail, ornamented at intervals with the *fleur-de-lys*. By having the rails open, it interrupts as little as possible the seeing York Minster from pinnacle to base,—a most desirable matter, and very grand it looks. There have been measurements taken and drawings made, for a restoration of Belfry church; and it is to be hoped that if it is restored, the frightful modern Gothic windows will be taken out, and windows of a character corresponding with the age at which this ancient building was built substituted. It will be desirable to open the ancient doorway, which is a beautiful one, and which can easily be used now there is such an ample space before it. The next building, the guildhall of the ancient city of York, is going to have a series of stained-glass windows, placed in the old windows now filled with plain glass. The subjects, I should suppose, will be connected with the history of the city. The walls of the guildhall are whitewashed. I would suggest the plan mentioned in the *Archæological Journal* of the Archæological Institute, vol. xix., p. 220, where it says, "St. Cunibert's church, the ancient cathedral of Cologne, situate to the north of the cathedral, on the bank of the Rhine, has recently been carefully restored and decorated in polychrome, with great effect. The semicircular apse has been painted in imitation of tapestry, with a grand figure of the Saviour in the upper part. The stained glass in this church is considered to be the oldest in this part of Germany." There is another matter in the decoration of this old hall which ought to be remembered. It had before the memorial window erected to the memory of Alderman Meek, a good window, by Giles, a glass stainer of the time of James II. Besides having the royal arms of James II., it had figures of Justice and Abundance, and a representation in a lower compartment of a stag or hart, and a waterfall, most likely allusive (in a covert way), to the verse in Scripture, Psalm xlii. 1,—"As the hart panteth after the water brooks, so panteth my soul after thee, O God;" meaning, no doubt, King James II.'s preference for the Catholic religion. It is supposed a window cannot be found, when all the new windows are arranged, large enough to contain this old window; and as the painted glass of "Giles" is rare and fine, I would suggest that one of the windows of the Minster now filled with plain glass be the place to put this interesting and very curious old window of the time of James II. The old chapel of the Bedern had some painted glass, which was taken out of its windows to preserve it from destruction. It is now in cases in the Minster; and I would also suggest that it be put up in one or more of the windows of the Minster at present filled with plain glass. Of course, a label at the base of the window should describe, in Gothic characters of the same age as the glass, whence all these windows were brought, and the date of their putting up in the Minster. Mr. Vervill, the ironmonger, on the Railway-station side of the Ouse bridge, is extending his handsome Gothic shop and warehouse front, which well deserves to form an illustration in one of the numbers of the *Builder*.

A most desirable thing as an improvement to the city of York would be to have a central station (as stated some time ago in the *Builder*) in Little Blake-street, where, if the houses that

remain were pulled down, a square would be formed before York Minster similar to the landing "Citadel station," at Carlisle. Then the line might be carried down Parliament-street, which might be covered with glass. From thence it might proceed through the White Swan-yard; cross, I believe, the Fosse, pass York Castle; and joining the cattle line down the moat, outside the City walls, at Micklegate-bar, join the Cattle-market near Walmgate-bar. The river Ouse might be crossed by an American bridge, wood or stone piers, which might be put across the river at St. George's-fields, for (say) the expense of 3,000*l*. I need not say how much this would benefit all the property in the neighbourhood, as well as the city at large.

It has been proposed to change the name of Museum-street, from the new bridge to Great Blake-street; and from Great Blake-street to Little Blake-street, to Duncombe-street. Now, I declare, as an antiquary, I cannot agree to this changing of the names of streets. They have changed Jubbergate, the Jews' quarter,—where we can imagine Isaac of York, mentioned in Sir Walter Scott's novel of "Ivanhoe," to have resided,—into Market-street, thus confounding its identity; and as I detest this, neither can I agree to the substitution of the name of Duncombe-street in the city that James II. took his title from as Duke of York. Let us preserve the names mentioned by great authors and hallowed by great events; for (to alter Longfellow),—

> "These are the grand old masters,
> These are the men sublime,
> Whose distant footsteps echo
> Through the corridors of time."

CONDITION OF THE MANCHESTER POOR.

A COMMITTEE appointed by the Manchester Statistical Society have been investigating the social condition of the Manchester poor, and they have published a number of statistics on the subject. The inquiry has been prosecuted from house to house, and such information as the people could give has for the most part been very readily imparted. The numbers representing the density of the population show that for the whole district inquired into there are 231,167 persons to the square mile, or an average of 13·26 square yards of ground for each individual. The average number of rooms occupied by a family is 2·46; but there are no less than 297 families, or 28·15 per cent. of all the families in the district, living in one room: many of these families consist of four, five, and six persons, and in several cases of seven persons each. In one case there are five persons in the room, their total earnings are 4s. and the rent is 1s. In another case there are four persons living in a one-roomed cellar, consisting of a widow and her lodger, and a spinster and her child. In another case, a man and his wife and two lodgers are living in one room: the man earns 18s. a week. In another, the family consists of seven persons, the children being two boys and three girls, two of them over twelve years, and their earning are 23s. a week. Many other cases of a similar kind have occurred in the inquiry.

In 574 cases the occupation of the head of the family is described as permanent, in 398 occasional, and in 82 cases as none at all. There are 571 families which consist of father, mother, and child or children. The number of lodgers who pay for their lodging is less than half the whole number. Very many of those who do not pay take care of the house or the children as an equivalent for their lodging: in some cases the lodgers are parents or other relatives of the head of the family, but in many cases they are no doubt prostitutes. The number of those who have money in the savings-bank is extremely small, viz., twelve, and of these only three are strictly working people.

In reference to the articles of food which form the staple of the family, considerable difficulty has been experienced, and it was found that in most cases the people were either unable or unwilling to tell what their principal food consisted of, or what was the cost of it. In forty-five cases, however, the principal food was stated. In one case a man and his wife and five children, whose total income is 19s. and rent 2s., spend 8s. 9d. a week in bread. Another family of six persons whose income is 26s. and rent 2s. 3d., spend 5s. for bread, 2s. for potatoes, 2s. for bacon, and 1s. for coal. In one family they never have any meat, their chief food being bread and tea. Another family of four persons, whose income is 4s. and rent 1s. 9d., have for five months had only one meal a day; and another, of three persons, where the husband and wife both work, and earn between them 5s. a week, and pay 1s. rent, have also but one meal a day.

THE CENTRAL CO-OPERATIVE STORES IN MANCHESTER.

THE new central co-operative stores in Downing-street have been opened. The building depends externally for architectural effect on a mixture of coloured and moulded bricks, stone being sparingly used. The shop-fronts are carried on box lintels of cast-iron, visible, and constructionally treated. The pediment breaks the line of main cornice. The façade is in Downing-street, from which entrance is effected by a stone staircase to the reading-room and library, which are special features connected with the stores. The large hall above is capable of seating nearly a thousand people. Another entrance leads to the drapery establishment and to the show-room on the first-floor; and on the ground-floor is the shopping warehouse, divided into two compartments, one for groceries alone, and the other for bread and food stores. In the cellar is a bakehouse, admirably fitted up.

Messrs. Pennington & Bridgen were the architects. The cost, including the fittings, supplied by Messrs. Statham & Sons, of Pendleton, has been over 3,000*l*. The builder was Mr. Johnson, of Ancoats.

At the inauguration, Mr. Percival gave some facts as to the progress of the society since its establishment, a little over five years ago. During that time, he said, the business done had been to the extent of 150,000*l*., and the working expenses amounted to 6,900*l*., leaving a net profit of 8,022*l*. The latter sum had been expended in interest to the members, 1,089*l*.; allowed for depreciation on fixed stock (costing the society 1,400*l*.), 771*l*.; devoted to the purposes of reserve fund, 125*l*.; applied to educational purposes, 111*l*.; 56*l*. had been given for various benevolent objects; and 5,870*l*. had been divided amongst the members and non-members. The society commenced with a capital of 100*l*., which had accumulated to 9,300*l*.; and, during the year, 2,000*l*. had been added.

THE BUILDING TRADES MOVEMENT.

THE strike and its cause still remain unsettled, and the men are everywhere protesting against the "discharge note," and resolving to assist those on strike in the Midland Counties. The masters at Birmingham are said to be wavering, but a series of resolutions by the Association, published in the *Birmingham Journal* of last week and elsewhere, do not give much indication of a disposition to abandon the "discharge note," although the resolutions "strongly recommend to the whole body of the operatives that all future disputes in the building trade be settled by arbitration." They also urge the formation of a national union of masters, and point attention to the "discharge note" as a chief object to be kept in view by such a union at its meetings. Others of the resolutions are explanatory of the intentions of the "note," and (uselessly, we will venture to say,) endeavour to persuade the men that they misunderstand its objects and its consequences, and that these are not hostile to their interests. The last resolution is, "That the original address read at the Birmingham meetings, the president's speech, and these resolutions, be sent to the *Times*, the *Builder*, and all the leading provincial papers in the Midland Counties." As to this resolution we feel it requisite to explain that, if these documents *were* addressed to the *Builder*, they failed to reach us, otherwise we should not have allowed our last issue to appear without any allusion to them.

Since these resolutions were passed, however, the aspect of the dispute has, it seems, undergone some change. Several of the masters, it is understood, are dissatisfied with the action of the general body, and are disposed to sever their connexion with it. The various trade societies throughout the kingdom, as we have already noted, are organising subscriptions in aid of the men on strike, and the leading organs of the newspaper press—London and provincial—have unanimously taken an adverse view of the policy of the masters, as we stated last week. The men, we believe, will agree to settle all other questions by arbitration, in accordance with the resolution adopted by the masters, but they will admit of no arbitration and no compromise as to the obnoxious "ticket-of-leave," in respect to which their adverse feeling is very strong. The carpenters and joiners, the only class at present on strike, have formally signified their assent to the proposal of arbitration as a rule, and the other branches would, no doubt, follow their example were the "discharge note" withdrawn. At Malvern, one of the members of the Masters' Association has already formally renounced the "discharge note," in a written agreement with his men, who have accordingly returned to their employment, on the terms of a three months' mutual notice of change. At Sheffield, Halifax, Stockport, and other places, the workmen have had meetings protesting against the "note," and resolving to aid those on strike. A delegate meeting of the London carpenters and joiners, have also done the same thing, and forwarded 100*l*. in one week to the Midland districts on strike. At this meeting the propriety of calling a general meeting of the London trades was discussed.

THE "DISCHARGE NOTE."

SIR,—Knowing that you adopt the motto of hearing both sides, I am somewhat surprised that no workman has forwarded his reasons for opposing the above project of "The Master Builders' Association."* The masters have shown that they can outvie the wildest doings of the trade-unionists. This innovation, so far as my observation is concerned, is condemned by every class of workmen. In working men's clubs, the discussion-hall, and workshop, it is opposed by men who have always held aloof from trade-unions. Not a workman is now to be found who will in public act as the masters' apologist. Go where you will, the cry is for a national union, which will embrace every village and town in the kingdom. It is too late in the day for such a farrago of nonsense to pass current as that read from the chair by the president of the Builders' Association, at Nock's Hotel, Birmingham. The talk about the oppression and dictation of operatives is mere bosh, whilst the operative can point to builders who a few years ago had not, as the saying is, a farthing in the world, but who now have their carriages and establishments, which outdo those of the aristocracy and merchant princes. The operative begins to understand some little about capital; and it is now quite common to hear the masters' idol called "accumulated labour." The masters seem to forget that the schoolmaster has been abroad, and that the works of Adam Smith, M'Culloch, Morrison, J. S. Mill, the *Edinburgh* and *Westminster Reviews*, and other politico-economic writings, are found upon a large number of building operatives' book-shelves. Had the master builders or their secretaries been as familiar with the economic doctrines they are always prating about as many of the operatives are, I fancy they would have thought twice before introducing "the passport and ticket-of-leave." Adam Smith says,—"The property which every man has in his own labour, as it is the original foundation of all other property, so it is the most sacred and inviolable. Capacity to labour is to the poor what stock is to the capitalists. Now, a hundred or a thousand capitalists may form themselves into a company or combination, take all their measures in common, and dispose of their property as they may, in their collective capacity, judge most advantageous for their interests; and why should not a hundred or a thousand labourers be allowed to do the same by their stock? Of all the species of property which a man can possess, the faculties of the mind and the powers of his body are most particularly his own; and to fetter him in the mode in which he is to exercise or dispose of these faculties and powers, is a manifest encroachment on the most inviolable of all rights." The masters reverse the above, and make capital sacred, and labour public property. The cry of the master unionists is, Why do the operatives oppose the "Discharge Note?" Answer of a non-unionist—Because the operative would be at the mercy of every little selfish master builder. Because the steady, industrious operative would often be at the mercy of a drunken, bullying foreman, and on that account would have to treat to get a ticket-of-leave. Because not one in 500 builders could promise an operative six months' employment. Because the note would be one-sided, as the operative would have no knowledge of the character of his next employer. Because it would be a re-enactment of the law of settlement, as an operative could not leave a district without the master's consent. Because it would reduce the educated mechanic to the level of a field labourer, who is now kept down and crushed by just such a combination as the builders propose. Because it is opposed to free trade and every law of political economy, and would again introduce a serfdom but little better than that of the Middle Ages. Because the character of a builder's workman is seen in his first piece of work; and as a door, sash, and frame take but a short time to complete, the time they are in hand and the finish of them constitute character sufficient for a three weeks' or a month's engagement with a master builder. I might cite other objections did space permit, but I think there is in the above sufficient to justify a non-unionist opposition of the "ticket." A JOINER.

"PATENT BRITISH CEMENT."—As a cement to unite either similar or dissimilar substances, such as glass and stone, marble and wood, and so on, this certainly seems to be a valuable material, and likely to be useful. At any rate, a number of specimens of such "joinery" have been laid before us, exhibiting remarkable adhesiveness.

* We print the following, as representing seven or eight communications to us on the subject, received from joiners, bricklayers, and masons.

MONUMENTAL.

A GREAT memorial work is to be raised on the spot lately occupied by the Barrière de Clichy, Paris, to commemorate the defence made there under Marshal Moncey, in 1814, and the project has been submitted to public competition. Twenty-seven designs were sent in, and six were chosen, the authors of which were invited to compete again amongst themselves. The prize has fallen to M. Doublemard. The principal group represents the marshal protecting with his sword an allegorical figure of the City of Paris, and being supported by four other figures—a garde national, a man of the people, a polytechnic student, and a pensioner.

A colossal statue of Vercingétorix, the celebrated Gallic chieftain, is about to be raised in the town of Alise, the ancient Alesia, where that hero made a desperate resistance to Julius Cæsar. This statue is about 20 ft. high, and the work of M. A. Millet. The difficulty and expense of executing such a gigantic work, either in stone or bronze, have led to the adoption of *repoussé* work. A considerable portion of the work is done, and report speaks highly of the effect, as far as it can be judged at present. The *repoussé* work has been entrusted to M. Aubert.

A granite obelisk, 15 ft. in height, has been sent out to Shanghai, to be erected over the grave of Mr. Alexander Bremner, C.E. The obelisk is of Aberdeen granite, sculptured by Mr. Keith, of Aberdeen, and prepared under the directions of Miss Sarah Bremner, sister of the deceased gentleman. The inscription on the base of the obelisk is,—"In memory of Alexander Bremner, C.E., of Wick, Caithness, N.B., who was cut off by cholera, when preparing to return to his native land, after a temporary sojourn in Shanghai, on the 14th October, 1862, in the 44th year of his age."

Sir George Abercromby, of Forglen, bart., says an Elgin paper, is about to have a mausoleum erected at Forglen, from plans by the Messrs. Reid, architects. It will cover 45 ft. square, and contain thirty coffin-shelves, of marble, on the sides, and six sunk compartments in the floor. The style will be Decorated Gothic, having parapet and raking parapet, pierced with quatrefoils.

PROPOSED TECHNICAL EXAMINATIONS FOR ARTISANS.

As growing out of the paper on Art-workmanship, recently read at the Society of Arts, and the discussion that followed it, Mr. Thomas Twining has proposed to the Council of that Society the establishment of examinations for testing the abilities of certain classes of workmen who may desire to be examined, and granting certificates of competency; offering to defray the cost of preparing the text-books required, and the examination fees for the first experiment. We shall doubtless hear more of it.

SANITARY MATTERS.

Liverpool.—Under the new Liverpool Sanitary Improvements Act, the Deputy Recorder, at St. George's Hall, has received a presentment from a grand jury upon premises reported to them by Dr. Trench, the medical officer. The presentment reports upon twenty-nine different lots of property, mainly situate in close courts and alleys, to the effect that "they are in a condition, state, and situation prejudicial to health, and ought to be improved; and that the houses, privies, and ashpits thereto belonging, and specified in the report of the medical officer of health, dated the 7th of December, are in a condition, state, and situation prejudicial to health, and unfit for human habitation." The presentment extends to the erection of water-closets, &c., in the places named, and concludes as follows:—"That they (the grand jury) find that many courts and alleys within the borough of Liverpool are rendered prejudicial to health and unfit for human habitation by reason of the same having open middens, ashpits, and privies attached thereto, and that such courts and alleys can be improved, and the above objections thereto removed, by trough water-closets being substituted in the place of such open middens, ashpits, and privies."——At the last weekly meeting of the Liverpool Workhouse Committee, it was stated that the typhus fever epidemic prevalent in the town was almost entirely amongst the indigent and dissolute classes. The melancholy announcement was made that of the six workhouse surgeons attending on the patients in the fever hospital, one had just died, two others were seriously ill, a fourth was absent on sick leave (all from typhus), and that only two remained fit for duty.

Stamford.—The fatal prevalence of scarlet fever in this town has called into action the Sanitary Committee of the Corporation. At a meeting, the Mayor in the chair, it was resolved that a notice be sent to the owners of property in Water-street, &c., recommending, "as an essential step, that the landlords and tenants in the affected localities do immediately cause the said tenements to be cleansed, whitewashed, and properly ventilated; also furnished with a liberal supply of clean water; and that they should prevent, as far as possible, overcrowding in their tenements."

RAILWAY MATTERS.

THE estimated cost of the proposed high-level railway bridge over the Severn, just above Old Aust Passage, is 1,800,000*l.* The river at this point is nearly two miles wide, but the main channel is not more than one-third of a mile. In order to bridge over this channel, and not interfere with the navigation, it is proposed to construct a bridge at a height of 110 ft. above high-water of ordinary tides, and of three openings—one of 600 ft., and two of 250 ft. respectively. Mr. H. H. Fulton, the engineer, in conjunction with some influential coal and iron masters, is the originator of the movement which has led to the adoption of the project by the Great Western Company. Mr. John Fowler, the consulting engineer of the Great Western, and Mr. Fulton, are now acting as joint engineers.

A compensation case, Wyld *v.* The Manchester and Sheffield Railway Company, has been decided in the Court of Queen's Bench. The plaintiff, a contractor and quarryman, was a passenger from Glossop to Newton, and the train being an exceedingly long one, part of it shot beyond the platform, and many of the passengers had to get out in the dark beyond the platform. The plaintiff, in getting out, received serious injuries from falling against a pump-handle, and the jury awarded him 1,250*l.* damages. The Lord Chief Justice, however, considered the damages excessive, and stayed execution on the payment into court of 500*l.* Subsequently, Mr. Temple, Q.C., obtained a rule *nisi* to set aside the verdict, and for a new trial, or to reduce the damages. At the suggestion of the Lord Chief Justice, it was arranged that the damages should be reduced to 1,000*l.*, without costs on either side for the rule.

The total railway receipts for 1864 amounted to 33,182,490*l.*, being an increase of 2,683,830*l.*, or about double the average increase per annum. The increase of traffic on the Caledonian Railway amounted to 100,900*l.*; Great Eastern, 108,000*l.*; Great Northern, 201,000*l.*; Great Western, 209,000*l.*; Lancashire and Yorkshire, 191,000*l.*; London and North-Western, 449,000*l.*; London and South Coast, 32,000*l.*; London and South-Western, 61,000*l.*; Manchester, Sheffield, and Lincolnshire, 84,000*l.*; Midland, 237,000*l.*; South-Eastern, 51,000*l.*; North-Eastern, 309,000*l.*; and North British, 62,000*l.*

The traffic receipts of railways in the United Kingdom amounted, for the week ending the 7th of January, on 11,786 miles, to 565,249*l.*; and for the corresponding week of last year, on 11,460 miles, to 530,292*l.*, showing an increase of 326 miles, and of 34,957*l.* in the receipts.

METROPOLITAN BOARD OF WORKS.

THE RIDLEY TENDER.

AT the last weekly meeting of the Board, the Main Drainage Committee presented a statement on this subject, which they submitted to the Board, as a reply to the charges made against the Board and its officers respecting the non-acceptance of Mr. Ridley's tender.

Mr. Upton moved that the statement be adopted by the Board. Various amendments were moved and negatived; and after a long discussion and an adjournment, the motion of Mr. Upton was finally adopted by a majority of 21 to 6.

It was then ordered that copies of the Drainage Committee's report and statement be sent to the members of both Houses of Parliament, and to the members of vestries and Court of Common Council.

PLAIN-TILING.

SIR,—In answer to your query on plain-tiling, thirty-five years ago I was employed to tile the roof of a mansion containing over 100 squares. The tiles were all laid in mortar; the mortar was laid at the bottom of the tiles; and the cross joint of each tile was carefully struck from top to bottom, thus preventing any water getting under the tiles. There was no symptom of wet getting in on any part of the house, nor any repairs for many years afterwards. There are very few bricklayers in the London district who can be safely entrusted to do plain-tiling in mortar unless strictly looked after, they using too much mortar, and not being careful with the cross joints, in which lies all the mischief. The mortar should not be laid more than 2 in. wide, and the tiles rubbed close together. All red tiles, as they are more or less porous, should be thoroughly saturated with water before using: it makes them tougher, and they will not absorb so much a second time.

With respect to laying plain-tiles in hay (I have done a great deal that way, as in the part of the country in which I resided slate was the exception, plain-tiles the rule), I consider if a roof is lathed with heart-of-oak lath fixed on with tenter-hooks boiled in linseed oil,—the hooks not driven through, but at the under edge of the lath,—loose hay litter spread evenly over the tiles, kept on with flat-headed iron pins, boiled the same as the hooks,—you will have the best kind of plain-tile roof for buildings where there is no walking over; but where there are gutters and trap-doors in the roof, I consider laying in mortar is the best, it not being so likely to get damaged by walking over. As to laying in hay being a modern practice, my father, who is seventy-six years old, and in the trade, says it was common in his youth, and considered the best method.

PRACTICE.

Another correspondent says, in the course of a letter on the subject:—

"In answer to query No. 3, Has mortar ever been known to render roofs damp; and, if so, why? My experience goes to show that tiles bedded in mortar always render the roof damp, from several causes. First, there are always hollow places, or cups, in the mortar underneath the tiles, which serve as reservoirs for the water, which escapes only by percolation or evaporation; secondly, in bedding tiles in mortar, the mortar squeezes into the vertical joint, which prevents the water running freely down the edge of the tile, and causes it to spread along the bed of the tile, to be again impeded in its descent by the mortar which forms the bed of the tile above; thirdly, mortar encourages moss to grow in the joints, as, when it decays, it forms a soil for the moss to root in, and the moss, again, impedes the escape of the water. The best method of tiling is to hang the tiles on to the laths without any bedding of any description; and when the roof is covered in, to touch them on the inside with stout hair mortar, run along on the top of the laths and the heads of the tiles, which prevents the snow drifting up, and holds every tile down to the lath. But all tiles should be made an eighth of an inch wider at top than bottom, which prevents the tiler from pushing the edges of the tiles close together, and always leaves the bottom end of the joint open, which forms a channel for the water to run down, which is very important; for if the edge of one tile touch the other, the grit of the roof washes into them, and stops them up; thus the water is impeded in its natural channel, which causes it to spread on the bed of the tiles and run through, which would not be the case if the joints of the tiles were an eighth of an inch wide, as the water would prevent them from gluting up.

H. P.

COLOURED BUILDING STONES.

SIR,—It has occurred to me that a very good opportunity has arisen for treating our building stones from a polychromatic point of view, through the medium of a lithographic publication. Great service might thus be done in assisting architects in the introduction of colour into their buildings.

There can be no doubt that, with the great variety of stones within our reach, greater effects, and those of a more artistic sort, might be produced than at present. The continued use of the positive colours, so much in vogue, has a tendency to vitiate taste by a crudeness of tone, and coarseness of feeling, nowhere to be found in our great instructor, Nature.

We have works in abundance illustrating the effects of our old architecture as questions of form, but very few in regard to their effect in colour; and while we may thereby study these works in one direction, we are debarred from considering them in another.

It has been argued that the natural mode of using stone is to take it as it occurs in any particular part of the country, and so confine its use to that district. The fallacy of this our artificial atmosphere will at once demonstrate. Of course, as nature did not take into account, in the formation of rock, the various combinations air would have to submit to, by reason of smoke, &c., the argument becomes rather more ingenious than sound.

There is, therefore, no reason why we should not have full use of any stones that may be harmoniously combined in our buildings. Of course, another question than colour would have to be considered,—durability, and the capabilities of the various stones to stand different atmospheres. Another thing might also be taken into account,—the ultimate general effect which a particular stone will have after a certain length of exposure, independently of the colouring influences at work through smoke, &c.

G. S. A.

THIN SHEET IRON.

THE American specimen which we some time since noticed in the *Builder* has naturally led to attempts in this country to ascertain the thinness to which British iron can be rolled; and Messrs. Murrall & Stothert, the metal brokers, of Cardiff, are said to have produced some sheets which, it is claimed, surpass the American specimens, both in quality and thinness. The plates are less than the 1,000th part of an inch in thickness, and a plate 8 in. by 5½ in. weighs 2 dwts. 14½ grs. only, without the slightest flaw, either at the edges or elsewhere. They are manufactured by Messrs. T. W. Booker & Co., of the Melingriffith Works, near Cardiff, from their celebrated R. G. "tagger" or "button iron," and are one-tenth thinner and lighter than the American plates to which such great consideration has been given. "The thinnest sheet of iron yet rolled in the world" (1,000th part of an inch) has elicited numerous competitors in this country. We mentioned that iron had been rolled at Cardiff considerably thinner, and since then some iron still thinner has been rolled by Messrs. James, of Bilston. A sheet has been rolled from common iron in the ordinary sheet mills by Messrs. Robert Williams & Co., of Swan Village, West Bromwich, which is only 1,015th part of an inch thick, is very tough, and has a good even surface. Another specimen consists of two sheets, measuring 8 in. by 5½ in., weighing respectively 49 and 49½ grains, and being the 1,400th part of an inch in thickness! These marvellous examples of iron rolling were produced by Messrs. Nevill, Everitt, & Co., of the Marshfield Iron Works, Llanelly.

ACCIDENTS.

DURING the late storm of wind, about 60 ft. of the great chimney at the factory of Messrs. Pontifex & Wood, engineers, in Shoe-lane, London, was broken off by the gale, destroying a smaller shaft, and falling into a dwelling-house in Plumtree-court, injuring six of the inmates, who were asleep at the time.

At the Peterborough station of the Great Northern Railway, a locomotive boiler has exploded, killing two persons, and injuring seven others, besides destroying a shed, 100 yards long by 40 yards wide. The damage to property is estimated at between 2,000*l.* and 3,000*l.*

At Liverpool, one of the 44-in. mains, connecting the Prescot with the Kensington reservoir, at Rivington, burst, flooding the neighbourhood, and destroying the road and footwalks. In about half an hour the water was shut off, and new pipes were immediately forwarded from Prescot. The double line of mains will shortly be completed to Kensington from Prescot.

A builder, named Jacks, of Lambeth, has been dashed to pieces, whilst crossing the line at Clapham Junction station.

An explosion of firedamp, attended with terrible loss of life, has occurred in a coal-pit at Hainault, in Belgium. Forty-two dead bodies had been got out of the mine, and sixteen or seventeen more remained to be found.

The tower of the well-known church of St. Lawrence, at Nuremberg (Bavaria), which is 300 ft. high, has been struck and set on fire by lightning, destroying the whole of the upper part. .

CHURCH-BUILDING NEWS.

Pett (*near Hastings*).—The Church of Pett is designed in the style of the architecture of the fourteenth century. The building is erected with the stone of the neighbourhood; but the window dressings, door jambs, and other ornamental parts are executed in Bath stone. The church consists on plan of a nave, chancel, and vestry, and a tower standing at the north-west corner of the nave, the ground story forming a porch to the church. The tower is square on plan to the belfry stage, when it changes to an octangular plan, with couplet belfry windows. The tower is surmounted by a lofty spire covered with shingles. The roofs are covered with local tiles. Internally the church is fitted with deal stained seats, and open timber roof stained. The edifice is visible from the road between Hastings and Rye for a great distance. The church accommodates 250 persons, and costs about 2,000*l.* Mr. B. Ferrey was the architect; and Messrs. Dove, Brothers, were the builders.

Roade (*Northants*).—The Parish Church of Roade has been re-opened for Divine service, after having undergone extensive alterations. The south wall and porch have been rebuilt, the west wall restored, the nave re-roofed, the south door of the new south porch restored, the galleries taken away, and the pews have given way to open seats. The cost of the restoration is about 800*l.*, the expense of all, with the exception of the pews, being covered by a rate extending over six years. The seats have been put in by voluntary subscription. The restoration has been carried out under the superintendence of Mr. Whitmy, of Northampton; Mr. Shakeshaft, of Ashton, being the contractor.

Mentmore.—Baron Rothschild has erected a Protestant church here for the benefit of Protestants in his employment.

Bournemouth.—The new chancel and burial-ground of St. Peter's Church have been consecrated by the Bishop of Winchester. The newly-added chancel, and its aisles and transepts, are in the Early English style. The carving, including reredos and pulpit, was executed by Mr. Earp, of London, under the direction of Mr. G. E. Street, architect. The contractors were Messrs. Rogers & Booth, of Gosport, and the clerk of the works was Mr. Davison.

Cricklade (*Wilts*).—St. Sampson's parish church has been re-opened for divine worship. The former ruinous and dilapidated condition of the structure is well known. The Earl of Radnor offered to restore, at his own cost, the Widhill aisle; and the vicar, the Rev. F. Dyson, assisted by the churchwardens and the leading inhabitants of the town, at once set about the work of restoring the remaining portion of the work, under the direction of Mr. Christian, architect. The expense of these works was at first estimated to amount to 2,000*l.*, but as the work proceeded it was found necessary to extend the sum to 3,450*l.*, or nearly double. With the exception of a large new east window in the chancel, which replaces a very small and inadequate one, the works have been strictly confined to a restoration of the building. The old plaster ceiling of the chancel has been taken down, and the open roof exposed. The lath-and-plaster partitions which separated the Hungerford Chapel from the chancel and the south transept have been removed, open wooden screens being substituted. The old irregular pews have been replaced by low open seats. The whole building has also been ventilated, heated, and lighted; the gasfittings being by Skidmore, of Coventry. The contractors were Messrs. Pedley & Son, of Highworth.

Stoke Bishop.—St. Mary Magdalene Church, Stoke Bishop, has been re-opened by the Bishop of Gloucester and Bristol, after having undergone some alterations and additions. The original structure was erected in the year 1860. The drawings for the building were supplied by Mr. Norton, architect. It consisted of a nave, chancel, and aisle, with a porch on the south side, and was capable of seating about 300 persons. The congregation, however, became too large for the building, and it was found necessary to increase the accommodation. Mr. Norton advised the addition of an aisle on the south side of the structure. The work was commenced about six months ago, under the superintendence of Mr. Baker, of Stoke Bishop, builder, who had been the builder of the church. By the increased space which the addition affords about 100 additional sittings have been gained. A series of subjects, four in number, and illustrative of events in the life of St. Mary Magdalene, to whom the church is dedicated, have been worked into corbels of the new arcade. Besides the aisle a vestry has also been added, and an entrance doorway has been opened at the western end. The cost has been subscribed. A tower and spire are wanting to give finish and proportion to the exterior.

Compton Pauncefoot (*Somerset*).—A new north aisle has been added to the church of St. Mary Compton, and the roofs of the nave and south aisle renewed, and now they form three nearly equal gables. The chancel roof has been restored, and a vestry added on the north side. The church has been re-seated with open seats of deal, and the nave being very narrow, there is no central passage. The chancel seats are of oak, and were carved by Mr. Forsyth, who has also executed the figures of the Virgin and Child, placed in the niche on the south porch. The reredos is of stone, and the central panel is filled with Dr. Salviati's mosaic, executed from the architects' designs. The floor is laid with Poole tiling. The chancel windows are to be filled with stained glass, executed by a Brussels firm. The works have been carried out from Messrs. Slater & Carpenter's designs, and under their superintendence, by Mr. Clarke, of Bruton. The chancel roof is now being decorated in colour, by Messrs. Clayton & Bell.

Torquay.—On consideration of some additional figures being sculptured in the reredos at St. John's, Torquay, the Bishop of Exeter has now given his consent to its remaining in its place. The object of the alteration was to make the work a more exact representation of the actual facts of the Crucifixion than it was originally. This has been accomplished without any alteration of the figures first of all sculptured.

Tuppsley (*Herefordshire*).—St. Paul's Church, commenced in July, 1864, is now making rapid progress. It will contain 537 sittings, all free; and will cost 2,300*l.*, towards which sum only about 1,600*l.* have been promised. The *Hereford Journal* of December 31st gives a view of the edifice. Mr. R. Kempson, of Hereford, is the architect.

Knutsford (*Cheshire*).—A font, in Grinshill stone, has just been put up in the Parish Church, Knutsford, by the family of the late Mr. Roscoe. The shape is octagonal: around the shafts are carved in relief figures of St. James, St. Peter, St. Paul, the Virgin Mary, and the four Evangelists: and on the basin are representations of the Baptism and Confirmation, Crucifixion and Ascension; Christ blessing little children; the Marriage Feast; Christ walking on the Sea; and the Last Supper. The floor is laid with Minton tiles, raised about 6 in. The font is about 5 ft. high, and is approached on one side by two steps for the minister during baptism. It bears the inscription "In memory of James and Hannah Roscoe, A D. 1864." The work has been designed and executed by Mr. Harrison, of Chester.

DISSENTING CHURCH-BUILDING NEWS.

Loughborough.—The new Unitarian chapel, lately erected in Loughborough, has been opened. The chapel, which fronts towards Victoria-street, is an adaptation of the style prevailing in the early part of the thirteenth century. The walling is of undressed random stone, from Charnwood Forest, pointed with black mortar, and dressings of Hollington stone, the inside of the wall being faced with white bricks, for distempering and diapering hereafter, when the work shall have become thoroughly dry. The nave is flanked by buttresses on either side, and lighted by six lancet windows, together with a circular window over the doorway in the gable, filled in with plate tracery, the whole being glazed with leaded quarries. Three lucerne lights are also introduced in the roof, on the Park-street side. Accommodation for the choir is obtained by an arched compartment, projected from the south-west corner of the nave, finished externally with a slated spire (in green and blue bands), terminated by a wrought-iron finial, in colour and gold, 72 ft. from the ground. The chapel is fitted up with open red deal benches, stained and varnished, affording accommodation for 176 hearers. The roof is open-timbered, of interlaced rafters, and a layer of felt is introduced between the slates and the boarding. The nave of the chapel measures 42 ft. 6 in. by 26 ft., independent of the choir. In the rear of and adjoining the chapel is a school-room, 42 ft. by 23 ft., with boarded floors, and with an independent entrance from Park-street, and having three class-rooms, and underneath the ground-floor an apartment containing the boiler which heats both chapel and school. The school buildings are built of red brick, relieved with a sparing introduction of blue bands, and the windows, gable copings, &c., are of Hollington dressed stone. The premises are entirely enclosed by a walled fence, that of the chapel being of stone, in character with the fabric. The stone walling, and bricklayers' and plasterers' work, have been carried out by Mr. Wm. Moss; the carpenters' and joiners' work by the firm of Messrs. Lamb & Stevenson, of Nottingham; the masonry by Mr. Walpole, of Loughborough, with the assistance of Mr. W. P. Smith, for the carved work; the glaziers' work and heating apparatus by Mr. Messenger; the painting, &c., by Mr. Greening, of Nottingham; and the gas-fittings were furnished by Mr. Rhodes, of Nottingham. Mr. Jno. S. Norris, of Nottingham, was the architect, from whose designs and under whose superintendence the works have been carried out; and the total outlay, exclusive of site, amounts to something over 1,200*l.*——The Victoria-street

Chapel of the Presbyterians has been opened. The new building fronts towards Victoria-street, and is an adaptation of the style prevailing in the early part of the thirteenth century. The walling is of undressed Forest slate, and the dressings of Hollington stone, the inside of the walls being faced with white brick. The nave is lighted by six lancet windows, with a circular window over the doorway, filled in with plate tracery. Accommodation for the choir is obtained by an arched compartment, projected from the south-west corner of the nave, finished externally with a slated spire, the finial of which reaches 72 ft. from the ground. The chapel is fitted up with open deal benches, varnished in the natural colour, and affording accommodation for 176 persons. The lighting is effected by ten gas brackets projecting from the walls and the usual branches to the pulpit. The heating is by means of hot-water pipes under continuous gratings on the aisles. The roof is open-timbered, of interlaced rafters. Adjoining to the chapel in the rear is a school-room with an independent entrance from Park-place; also a vestry and an upper and lower class-room. The school buildings are of red brick, relieved by a sparing introduction of blue bands, and the windows, gable-copings, &c., are of Hollington dressed stone. The stone walling, bricklayers' and plasterers' work, have been carried out by Mr. W. Moss, of Loughborough; the carpenters' and joiners' work by Messrs. Lamb & Stevenson, of Nottingham; the masonry by Mr. W. Walpole, of Loughborough, assisted by Mr. W. P. Smith for the carved work; the glaziers' work and heating apparatus, by Mr. Messenger, of Loughborough; the painting, &c., by Mr. Greening, of Nottingham; and the gas-fittings were furnished by Mr. Rhodes, of Nottingham. The architect was Mr. John S. Norris, of Nottingham. The total cost of land, buildings, and other charges will be little short of 1,450*l*.

Mexbro' (*Yorkshire*). — The new Primitive Methodist Chapel, Mexbro', has been opened. It stands on a conspicuous site, and can be seen from the railway, rising above surrounding buildings. The rapid elevation of the ground from front to back necessitates flights of steps to the principal entrances and lobby. From the lobby, doors lead into the chapel on either side, and galleries are approached by means of separate staircases. The inside dimensions of the building are 46 ft. in length, by 36 ft. 6 in. in width, and 25 ft. from the floor to the ceiling: a vestry also 14 ft. by 10 ft., is built at the back, over which is arranged the gallery for the singers, which can be used as a rostrum. The galleries range round either side of the chapel, as well as over the front portion. The building presents an Italian elevation, the semicircular and segmental arch being prominent features both in the interior and exterior arrangements. The walls are built of stone from the neighbourhood, and the quoins rusticated and cleansed similar to the stone dressings, architraves, friezes, inscription stone, and tablings. The ceiling is a flat one, with a cornice running round the walls. The chapel is capable of seating 600 persons. The works have been designed and carried out under the direction of Mr. A. Fippard, of York, architect, by Mr. Arnold, of Doncaster, builder. It is the fifth Primitive Methodist chapel built by Mr. Arnold in the Doncaster circuit. The gas-fittings were executed by Messrs. Smith & Son, of Doncaster.

STAINED GLASS.

Cobridge Church (*Staffordshire*).—A stained glass window, to the memory of the late Rev. R. H. Bentley, the former incumbent, and Mrs. Bentley, has just been placed in the chancel of this church. The subject is "The Sermon on the Mount." In the highest part of the central light our Saviour is represented sitting under a palm-tree, while beneath and around him are grouped the multitude, who fill up the lower part of the central and the two side lights. Several of the disciples are prominently introduced. The window has been supplied by Messrs. Cox & Son, of London, and is the production of a French artist. It has cost about 200*l*.

Kingswinford Church.—The parish church of Kingswinford, at Wordsley, has just been beautified by an east window, presented by the Misses Parrish, in memory of their late brothers, John and Richard Parrish. The window is a large one, containing ten compartments besides the upper tracery. The middle upper light is occupied by a medallion of our Lord's Ascension, taken from a picture of Raffaelle's; and the three middle lower lights contain Leonardo da Vinci's well-known representation of the Last Supper. The tracery and the other lights are filled in with quarries of a geometrical pattern, the prevailing colour being blue. The window is the work of Messrs. Powell & Sons, of London.

St. Stephen's Church, Norwich. — The large west window of twelve lights in this church has recently been filled with stained glass. The subject illustrates the life and death of St. Stephen, each subject being carried through two openings, as follows:—1, St. Stephen ordained; 2, Distribution of Alms; 3, Preaching; 4, Cast out of the City; 5, Stoned; 6, Burial. The ornamental portion is Perpendicular in character. In the tracery are the twelve apostles, angels with emblems, &c. Two other windows of four lights each, have also been filled with stained glass, the subjects being "Abraham's Sacrifice" and "Rebecca and Abraham." A fourth window, having for its subject, "Christ blessing little Children," has also been erected. These are all memorials given by a lady in memory of deceased relatives. The whole of this work has been executed by Messrs. Heaton, Butler, & Bayne, under the direction of Mr. R. M. Phipson, Norwich.

Howe Church, Norfolk.—A window of three lights has just been filled with stained glass as a memorial, the figures of Faith, Hope, and Charity, with their emblems, being introduced. This window is from the works of Messrs. Heaton, Butler, & Bayne, under the direction of Mr. R. M. Phipson.

PROVINCIAL NEWS.

Hulme.—The completion of the Town-hall for the township of Hulme has been celebrated by a public dinner. The building, designed by and erected under the direction of Mr. Lynde, the city surveyor, is in the Italian style of architecture. The completed façade, in Halifax stone, presents a rusticated basement, comprising the cellar, rockfaced in Bolton stone, and the ground-floor, smooth or polished. In the centre of the ground-floor is the principal entrance, a segment-headed doorway. Carved modillions support a cornice which divides the ground-floor from the first-floor. This contains seven balustraded and simicircular-headed windows: the arches, containing an enrichment of the laurel-leaf pattern, spring from a moulded entablature, resting upon Ionic columns. The three central windows are slightly recessed. The middle window is between two Corinthian columns; and these and four corresponding pilasters support a cornice, surmounted by a balustrade, having in the centre the city arms, and further relieved by four vases. In the frieze are carved floral festoons, and over the three central windows are heads of Oratory, Justice, and Mercy. The principal front, in the Stretford-road, is 184 ft. in length. The design comprises a centre and two wings; the central portion, 94 ft. in length and 66 ft. high, being appropriated for the Hulme Town-hall and township offices. The west wing, 45 ft. in length and 50 ft. high (now in course of erection), is appropriated to a branch free library; and the east wing, also 45 ft. in length and 50 ft. high (not yet commenced), will be appropriated to the overseer's offices. The central building comprises, on the ground-floor, the township offices, committee-room, fire-proof room, and surveyor's department, together with a public weighing-machine and office at the back, in Dale-street. In the basement are a spacious kitchen and offices, with serving-room, and hoist to the upper floors, as well as workshops and other conveniences connected with the township business. The principal floor is approached from the entrance in the centre of the principal front of the building by a vestibule and grand staircase, lighted by a stained glass window bearing the Royal arms in a central compartment at the top, and the arms of the Duchy of Lancaster, the hundred of Salford, the city of Manchester, and the township of Hulme, in the four corners, the central divisions having emblematical figures of Industry, Commerce, Peace, and Plenty. The hall is paved with encaustic tiles. On the principal floor is the public room, 90 ft. long, 45 ft. wide, and 38 ft. high. It is lighted by day by the seven windows in the principal front, and by night by three sunlights suspended from the ceiling. In connexion with this room is a refreshment or supper-room, 35 ft. long by 22 ft. wide, and 18 ft. high, with dressing and retiring-rooms. On the upper floor is another supper or committee-room, of the same dimensions, with dressing and retiring-room in connexion with it. The area of the large hall is double that of the Manchester Town-hall. The contractors were: for the excavation and drainage, Messrs. Naylor & Son; for the brickwork, Mr. Wm. Healey; for the masonry, Messrs. Ellis & Hinchliffe; for the joiners' work, Messrs. Clark & Jones; for the iron work, Messrs. Kitchen, Brown, & Co.; for the plumbing, &c., Messrs. Harrison & Son; for the plastering and painting, the late Mr. Hood; for the gas-fittings, Mr. Helsby; for the slating, Mr. Kirkley; for the stone carving, Mr. T. R. Williams; for the encaustic tiles, Messrs. Maw & Co.; for the stained glass window, the late Mr. Edmundson; and for the heating apparatus, Mr. Crowe. The whole has been executed under the superintendence of Mr. S. Taylor, the clerk of the works. The cost of the central portion of the building has been about 12,000*l*.

Colchester.—On the part of the Colchester new Corn Exchange Company, communication has been made with owners of property, with a view of providing an extended frontage to the street; and if the entire Public Hall property, including the house and premises in the occupation of Mr. J. B. Harvey, could be purchased on reasonable terms, it would materially add to the accommodation. There appears to be a prospect of facilities being offered for the erection of a corn exchange, in every way adequate to meet the requirements of the district.

Manchester. — The proprietors of the Royal Exchange have ratified the proposals of the committee for the erection of a new building, and sanctioned the raising of the necessary funds by the creation of new stock. The probable expense of the undertaking, including the purchase of the property required, the erection of the new Exchange, and the alteration of the present building, is estimated at nearly 200,000*l*.

Books Received.

Normandy: its Gothic Architecture and History as Illustrated by Twenty-five Photographs. A Sketch. By F. G. STEPHENS. London: A. W Bennett, Bishopsgate-street. 1865.

THE title of this book scarcely commends it to the right class of readers: it is not an architectural work, but a very pretty and interesting volume for the general reader or the drawing-room table. The photographs are too small and indistinct to be of value to the architect, but make picturesque illustrations for the tourist and general student. One great peculiarity, however, in respect of the views, must be noticed, that, illustrating Normandy, the photographer has given no example of "Norman" (round-arched) architecture, if we except the interior of the nave of Bayeux Cathedral. The title, "Normandy: its *Gothic* Architecture," &c., prepares the reader for this; still the omission is a singular error. The historical essay is clearly and agreeably written.

Speaking of the fine church of St. Ouen, in Rouen, Mr. Stephens says,—"The nave was completed about 1340; but such was not the case with regard to the transept until 1439, when the rose windows were inserted by A. Berneval, '*architect and clerk of the works.*'" We should be glad to have these quoted words in the original, and to know their source.

VARIORUM.

IT will suffice to mention that "The Builder's and Contractor's Price Book, revised by Mr. G. R. Burnell, is published for 1865 (Lockwood & Co.). Mr. Burnell is well qualified for the task, and is, moreover, of so painstaking a habit, that we should put faith in the result of his labours. The fact that for daywork the charge for artificers (bricklayers, masons, &c.) is put down at 6s. 8d. a day, and for labourers at 4s. 2d., shows that revision must have been made in many of the detailed prices. An Appendix gives a number of useful tables, items of information connected with the various trades, and instructions as to mode of measuring.——"The Engineer's, Architect's, and Contractor's Pocket-book for 1865," contains its usual large amount of special information. It includes, *inter alia*, a useful *résumé* of the available knowledge as to cast-iron girders and iron roofs.——"The Railway, Banking, Mining, Insurance, and Commercial Almanack for 1865" (Red Lion-court), contains, with the usual matter of an almanac, a large amount of useful reading, in the manner of the "Companion to the Almanac," bearing on

the departments to which it is devoted. We are disposed to award high praise to the present issue. It is edited by Mr. W. Page Smith.——A new edition of Mr. Septimus Piesse's "Chemical, Natural, and Physical Magic," just now published by Messrs. Longman & Co., contains some fresh tricks and games requiring mental labour. It is a book full of amusement for young people, and well calculated to educe ingenuity and "sharpness," and induce quickness and precision of thought. The recreation afforded by it may be made to administer many good lessons.——*The Literary Gazette* has been revived as a monthly record of literature, in a shape that will be useful to book clubs and buyers generally; but scarcely one to commend it to the reading public. It contains a vigorous letter from William Jerdan, the founder of the original *Literary Gazette*, pointing out what all must feel who think about it, that the present period can scarcely compare for great names in literature with that which has just passed away. The prospect in art is equally, as it seems to us, disheartening.

Miscellanea.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—The seventh session of this society was opened on the 12th, with a *conversazione*, which was held at the Institute of Painters in Water-Colours, Pall-mall. The programme of music for the evening embraced both vocal and instrumental selections.

LIVERPOOL ARCHITECTURAL SOCIETY.—At the meeting on Wednesday evening, the 11th, Mr. Joseph Boult presiding, Mr. A. B. Anderson read and explained his scheme for the river approaches. The chairman alluded to the various schemes that had been brought forward, and expressed his opinion that this was the best he had yet seen. He pointed out that it would be necessary to have more than one system of approach to the river. It was suggested that Mr. Anderson should exhibit his plans publicly. The chairman called attention to the circumstance that, by the permission of Mr. Lyster, the dock engineer, the members of this society would, on Saturday, the 14th inst., view the works in progress at the north entrances, and the sluicing channels of the Birkenhead Docks.

ASSOCIATION OF FOREMEN ENGINEERS.—The London Association of Foremen Engineers held their annual meeting on January 7, when Mr. Joseph Newton, of the Royal Mint, was, for the seventh time, unanimously elected president for the year. In tendering his resignation, Mr. Newton observed that during the past year, thanks to Messrs. H. Grissell, Henry Maudslay, Telford, Field, John Penn, and others, the jealousy with which their proceedings had for some time previously been regarded by engineering employers had been to a very considerable extent dissipated. Mr. Thomas Sanson was chosen vice-president, and Mr. David Walker, of Messrs. Maudslay's, secretary, for the current year. Mr. C. F. Hayes explained the processes employed in converting solid ingots of homogeneous steel into tubes by hydraulic power.

LORD S. G. OSBORNE AND THE WORKING CLASSES.—On Saturday evening the Rev. Lord Sydney Godolphin Osborne delivered a lecture in the temporary church of St. Michael, St. Leonard's-road, Bromley-by-Bow,—the extreme east of London,—to the working men who attend the evening schools in that district. In consequence of the number of artisans and others employed in the docks, the population of the parish of Bromley (the living of which is in the gift of Mr. John Walter, M.P.) increased from 11,000 in 1851 to 24,000 in 1861, and it is now about 28,000. Through the exertions of the clergy, classes have been established for the working people, large numbers of whom now devote portions of their evenings to the study of mensuration and geometry, navigation and nautical astronomy, arithmetic, algebra, history and geography, book-keeping, French, Scripture history, drawing, and other branches of useful knowledge. Lord S. G. Osborne's lecture was introductory to the course of the present year, and his subject was "The Hand and Hands," in which his lordship extolled the human hand as the most wonderful of machines, and expressed his opinion that, to speak of workmen as "the hands" of an employer, was the highest title that could possibly be conferred upon them.

THE CHURCH AT GILSLAND.—Sir: I see you include the church at Gilsland amongst those you name as being the works of the late Mr. Dobson, of Newcastle-on-Tyne. Allow me to say the above church was designed by me, and carried out solely under my direction.—JAMES STEWART, Carlisle.

LOSS BY FIRE IN SWEDEN.—The library of the cathedral church of Strongnaes, Sweden, has been destroyed by fire. It contained a great number of Scandinavian antiquities, valuable manuscripts, and rare books, which came from the pillage of the convents of Bohemia and Moldavia during the thirty years' war. The library was founded in the fifteenth century, and science and literature have by this catastrophe suffered a severe loss.

WORCESTER CATHEDRAL RESTORATION.—The Dean and Chapter, and the committee appointed to act on behalf of the subscribers to the restoration fund, have decided that the organ, the screen, and the canopies of the stalls, shall be at once taken down. A portion of the present organ will be temporarily removed by Mr. Hill, of London, to a site in the north aisle, in order to ascertain the effect of an instrument placed in that position. The local *Herald* asks,—"Why not try the great south transept, where it would interfere with nothing, nor hide anything which is worthy of being seen?" By the erection of the stoves in the cathedral, a warm and comfortable atmosphere has been secured.

NORTH LONDON WORKING CLASSES INDUSTRIAL EXHIBITION.—The distribution of prizes to the successful exhibitors took place on the 16th instant, at Exeter Hall. The Earl of Shaftesbury, K.G., presided, and distributed the prizes. The large hall, galleries, platform, and orchestra were crowded. The prizes consisted of books and certificates. The certificate is in the form of an illuminated design, commemorative of the exhibition, each signed by the Earl of Shaftesbury, and framed in a gilt frame. The memorial, given to every exhibitor, is a volume, containing a complete history of the exhibition, with a frontispiece portrait of Mr. Watts. In his address the chairman said he had been told that in future exhibitions the exhibitors were to be confined to the branches of industry in which they were daily engaged. To that he responded, Heaven forbid! The exhibitions were more social than financial. Their object was to hold out refined recreation to the working classes, to break the monotony of their labour, and to give a large development to the taste and imagination of the working men. To put the interdict in operation to which he had alluded would be to put an extinguisher upon the efforts of working men, and would stand between them and recreation. Why, they had lamplighters and hairdressers and costermongers exhibitors. How could such men exhibit if they were to be confined to the products of their usual industry? Let taste and genius have their full scope, and let them not be drowned in the pot-house and gin-palace. The secretary of the West London Exhibition denies the accuracy of Lord Shaftesbury's information on this point. It is nevertheless desirable, as we have said, that artisans should do their best in their own line.

BEVERLEY NEW CATTLE MARKET.—A field in the neighbourhood of the railway station has been converted into a market. A wall, 7½ ft. high, protects the railway side, the remainder being hedge fences. The market is divided lengthwise, into two equal divisions, by a road 22 ft. wide. The cattle-stalls are constructed of 9 in. by 9 in. and 7 in. by 7 in. oak posts, with four rails of 1-in. and ¾-in. wrought-iron tubing; the uppermost being 4½ ft. from the ground. The number of stalls devoted to cattle is seventy-seven, and these will hold 1,500 head. The sheep-pens are 133 in number, and will accommodate from ten to fifty sheep each, or 3,000 in all. These are entirely formed of iron, the rails being of 5-8ths iron, and the uppermost of the four being 2¾ ft. high. All the roads are laid with chalk foundations, and the drainage is effected by 6-in. sanitary pipes, with a 9-in. fall. The sheep-pens are all paved with bricks, and the ironwork covered with a coating of tar. Within the market stands the market-keeper's office, urinals, &c.; and there are also two or three gas-pillars. The total cost of the market, including land, fittings, &c., will not, it is said, exceed the estimate, 2,200*l*. A banquet has just been held to inaugurate the opening of the new market.

A NEW USE FOR MAGNESIUM.—The magnesium lamp (if it can only be made practically useful) promises to become a regular article of furniture in every silk-mercer's show-room. Whether by night or on a dark day, any question as to colour is in a moment set at rest in the flame of a bit of magnesium wire.

BRADFORD WATERWORKS.—Mr. Ferrand, M.P., has addressed a letter to Sir George Grey, in which he complains that orders have been given by the Bradford corporation to refill the Doe Park Reservoir before an inspection of the repairs has been made by a civil engineer. The repairs have been made under the sole superintendence of the borough surveyor. Mr. Ferrand alleges that the reservoir is still in an unsafe condition. The mayor of Bradford replies that he thinks the public need be under no alarm after the result of Mr. Ferrand's complaints last session, and gives an assurance that the waterworks committee know their responsibility, and will discharge their duty.

THE ATLANTIC TELEGRAPH.—A coil of 279 miles of this cable has been shipped in H.M.'s ship *Amethyst*, for transmission to the *Great Eastern*, in the Medway. Upwards of one-third, or 900 miles of the cable have now been manufactured at the works of the "Telegraph Construction and Maintenance Company," formerly Glass, Elliot, & Co. The entire length will be 2,300 miles; but allowing for slack, 2,400 miles will be provided. A very small space in the *Great Eastern* will be required for the whole, which will weigh about 17,000 tons. In about six months the line will be laid.

PROPOSED IMPROVEMENTS IN MILAN.—Some months ago we informed our readers that plans had been approved of in Milan for re-arranging the space, and re-erecting streets and buildings around the cathedral. It seems that a company has been formed, with a capital of 600,000*l*., in 20,000 shares of 30*l*. each, for the purpose of carrying out these plans. The concession, dated the 28th of July, 1864, granted by the municipality of Milan, confers the grant of the fee simple of about seven acres of land in the heart of the city immediately surrounding the cathedral, for the purpose of re-building the Piazza del Duomo, and connecting it with the Piazza della Scala. The capital is already in a measure subscribed, and English enterprise, it is expected, will soon complete the business. The project is launched under the auspices of the Credit Foncier and Credit Mobilier Companies of England.

PORTRAITS PHOTOGRAPHED FROM THE RETINA OF THE EYE.—Our readers for the last few years may remember a notice in the *Builder*, of an instance in which it was alleged that a photograph of a butcher had been obtained from the eye of a bullock which had been killed by him. Some doubts were cast upon the circumstance at the time; but the possibility of it seems now to have been brought up again by the Florence correspondent of the *Morning Post*, who has seen the photograph of a murderer, taken from the retina of a human eye. The photograph appears to be rather a nebulous one; but the general traits of the countenance, such as the wide nostrils, the large mouth, &c., are said to have been sufficient to identify the man. As corroborative evidence, such photographs would be valuable, of course; but it would be perilous to risk a life upon such evidence alone, as the portrait might not be that of the murderer.

"WORKING THE ORACLE."—The writer of a paper in the *Social Science Review*, "On the Employment of Returned Convicts," speaking of John Kendrick, who lived in the bad old times of James I., says he established in 1624, in his native town, Reading, a manufactory for the production of woollen fabrics. "Into this factory any man who chose might enter and find employment. If a man had other and better employment elsewhere, good; if he had none, then at Reading he had no pretext for idleness or vagrancy, for he knew where he would find work, and receive proper wages for work done. It was a house 'for the begging poor.' For a few years the plan answered well. In course of time, for some curious reason of which we know nothing now, this factory was called the 'Oracle.' 'To work in the Oracle' implied that the workman had resort to it because he was out of work elsewhere; at last the term became general, and from it we believe sprang, somewhat modified, the slang phrase, 'Working the Oracle,' which we hear to this day."

INTERNATIONAL REFORMATORY EXHIBITION.—An exhibition of the products of industrial schools, reformatories, refuges, and similar institutions at home and abroad, is to be held in London, in May, 1865, in the Agricultural Hall, at Islington. At the opening, 1,000 children from the reformatories will form a choir, and assist in the inauguration. Under the direction of the committee of the Reformatory and Refuge Union several exhibitions of industrial work have already been held in London. The first of these was in 1856, and was honoured by the presence of the Prince Consort and a large number of the nobility and gentry, and others interested. On the present occasion, however, the managers of similar institutions in all parts of the world will be invited to send for exhibition, and, where desired, for sale, specimens of the industrial work of their inmates.

THE IRON TRADE.—Much agitation prevails, and exercises an evil influence. Prices remain doubtful until it is known what the men will do. Ryland's *Iron Trade Circular* says with reference to the matter:—"The men must not forget how the Iron Ship Building Trade was driven from Ireland, and how one industry after another has taken wings from that angry hot-bed of strikes. How much our district has already been affected by similar insensate agitation, wickedly conceived and ignorantly executed, it is impossible to calculate; but an instance was mentioned on Thursday of a Russian order for 100,000*l.* of machinery for that Government having been declined during a former strike, and carried over to the South of France, where the connexion has ever since remained, because the manufacturers here, when offered the order for time, declined it in consequence of the uncertainty of their men at the period. And this is one of many hundred cases."

VITRIFIED FORTS.—About forty of these curious relics of the past have been discovered throughout Scotland, including several in Galloway. They are to be found in the great glen of Scotland, and there is a very perfect one in the Kyles of Bute; but, in extent, that of Craig Phadrig, near Inverness, surpasses them all. It is remarkable that none have been found in England. The most plausible and generally accepted theory of these structures is, that originally they were built for purposes of defence, and afterwards used as convenient stations for beacon-fires. Now, however, that Mr. Laing's discoveries in Caithness go to show that our "rude fathers" had a tendency to cannibalism, does the old theory seem so improbable that the fires that first fused these massive rocks together were the fires which are said to have been kindled for human sacrifices in honour of Baal or the Sun, who was an object of worship with our barbarous progenitors? — *Dumfries Courier*.

GAS.—The directors of the Hull Gas-light Company have resolved to supply gas at 3s. 9d. per 1,000 cubic ft.——The directors of the Sunderland Gas Company have reduced the price of their gas to 4s. per 1,000 cubic ft., with discounts for cash—12½ per cent. under 50,000 ft., 20 per cent. under 200,000 ft., and 25 per cent. above 200,000 ft.——The gas movement which the *Builder* set agoing in past years, and which has already so greatly reduced the price and improved the quality of gas throughout the country, is being renewed in London, where meetings of gas consumers are being held for the purpose of either forcing a reduction of price to 2s. 9d. per 1,000 cubic feet from the present companies, or establishing municipal gas-works on the Manchester principle. The announcement of an intention on the part of the Imperial Gas Company, which has a monopoly of the Paddington, Marylebone, St. Pancras, Islington, and Hackney gas supply, to apply to Parliament for power to raise 1,735,000*l.* has startled the London gas consumers, who know pretty well what *that* means; and they are organising an opposition to the company's design. They ought to be made fully aware, however, that a good deal of money may be requisite to carry out such an opposition effectually.——The Canterbury Gas Company have announced an intention to reduce their price from 5s. 6d. to 5s., but the citizens are dissatisfied, and insist on a reduction to the Maidstone price of 4s. A rival company is talked of.——The Worcester Gas Company have reduced the price of their gas to 4s. and also made a considerable reduction at same time in the price of their coke.

THE WHITCOMB RESERVOIRS, GLOUCESTER.—The surveyor having reported to the Waterworks Committee of the town council on the 20th ult., that a considerable leak had been discovered in the embankment of the lower reservoir, supposed to arise from some defect in the mains supplying Gloucester, either in the joints or by the bursting of a pipe, he was authorized to open down to the supply main, and found that a defective joint in one of the pipes had caused a leakage equal to 10,000 gallons a day. It was resolved that the surveyor should put in a culvert, 4 ft. 6 in. in diameter and 10 yards long, over the supply main, so as to enable him at all times readily to examine the main and make any repairs necessary, and also to put in a drain from the screen vault. The council have confirmed the resolution of the committee.

THE CONSTRUCTION OF CHIMNEYS.—At a recent meeting of the Chester town council, a letter from Richard Parry, chimney-sweeper, Broughton, to the council, was read by the town clerk, on the violation of the Act for the Regulation of Building Chimneys (3 & 4 Vict., cap. 85). The writer stated that "the disgraceful state of hundreds of chimneys in this city loudly calls for your interference, as being built contrary to Act of Parliament, no sweeping machine being able to clear away the accumulation of soot, and thus giving great cause of danger by fire." The writer further stated that he "was confident that much property in the city was in a very doubtful state on account of the bad state of the chimneys; and most insurance offices, were they aware of the fact, would decline granting the policy of insurance."

TENDERS.

For mansion, stables, &c., at Dover for Mr. I. I. Ellis. Mr. Rowland Rees, jun., architect. Quantities supplied:—

Bonley	£8,161 3 4
Watkin & Son	7,835 6 11
Matthews	7,598 0 0
Fry & Pepper	7,205 7 0
Stiff & Co.*	7,173 0 0

* Accepted, subject to certain provisional alterations.

For rebuilding premises, Ryder-street, St. James's, for Messrs. Christie, Manson, & Woods. Mr. J. Norton, architect:—

J. & A. Hermon	£5,455 0 0
G. Myers & Sons	5,167 0 0
J. & C. I'Anson	4,990 0 0
Holland & Hannen	4,843 0 0

For building a villa, at South Moor, for Mr. Benjamin Levy. Mr. John Tillman, architect:—

Hirst & Son (accepted)	2,300 0 0

For the extension of Mr. Cadby's pianoforte manufactory, Liquorpond-street. Messrs. George & Vaughan, architects:—

Lose (accepted)	£1,079 19 0

For building Baptist chapel, Canterbury-road, Kilburn. Mr. Hall, architect:—

Feltham	£1,387 0 0
Stevenson	998 0 0
Ferguson	978 0 0
Manley & Rogers	942 0 0
Palmer	887 10 0

For alterations and additions to Rothwell Lodge, in the county of Northampton. Mr. R. W. Johnson, architect:—

Henson	£310 0 0
Birkett	299 0 0
Wilson	286 0 0
Buswell & Hawthorn	282 0 0

For building a Wesleyan chapel, at Lytchett Minster, Dorset:—

Saunders	£503 8 6
G. & J. Curtis	494 10 0
Hunt	403 0 0
Sharland	365 0 0

TO CORRESPONDENTS.

X. (consult the patentee).—M. C. (the supposed discovery is an old one).—W. M. C. (for the duties of the "district surveyors," see the Metropolitan Building Act).—Architect (the application of the "water glass" process to the walls of hospitals, to render them non-absorbent, has been recommended, but we are not aware that it has been tried).—B. R. (it is in accordance with custom for an architect to charge for *time* occupied in travelling to visit his works (distant 200 miles), in addition to 5 per cent. commission and travelling expenses; though often departed from, by arrangement).—A. Z. (we do not undertake to instruct our brother architects how to manage their clients).—B. B. (the question is, not what H. B.'s cottages cost, of which we have no idea, &c., but what the particular cottages illustrated may be built for).—Theta (shall have attention).—N. W. (this was tried some years ago, but did not succeed).—B. W. M. (we cannot interfere between master and apprentice).—F. & A.—H. B. & B.—A Reader.—A Subscriber.—S. S.—Messrs. C.—Mr. E.—Messrs. D. & Son.—C. & B.—J. D.—P. R. W.—L——.—W. H. H.—J. B.—G. C. P.—Glasgow.—Messrs. H.—J. M.—C. F. K.—H. W.—W. S.—Messrs. O'C. (shall have attention).—R. T. M. (sent no address).—Magnesium Light (correspondents who require address for this must look to advertisements).—C. B. A.—S. C.—R. J.—W. G.—Mr. H.—Mr. R.—W. M.—T. W. W. (thanks).—Messrs. L. & Co.—G. F.—J. B.—B. C.—D. R.—H. P.

A mass of correspondence received on Thursday necessarily stands over for consideration.

The pressure of actual news has compelled the postponement of the continuation of several articles.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender; not necessarily for publication.

TO SUBSCRIBERS.

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Advertisements cannot be received for the current week's issue later than **FIVE o'clock, p.m.**, *on Thursday.*

[ADVERTISEMENT.]

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THE QUARTERLY REVIEW
No. CCXXXIII. is published THIS DAY.
CONTENTS:—
I. WILLIAM BLAKE THE ARTIST.
II. ARISTOTLE'S HISTORY OF ANIMALS.
III. SIR JOHN ELIOT.
IV. LORD DERBY'S TRANSLATION OF THE ILIAD.
V. MEMOIRS OF SIR ROBERT WILSON.
VI. SERVIA.
VII. SYRIAC LITERATURE.
VIII. EPIGRAMS, ANCIENT AND MODERN.
IX. THE UNITED STATES AS AN EXAMPLE.
*** The Quarterly Review is published as nearly as possible on the 14th of January, April, July, and October.
JOHN MURRAY, Albemarle-street.

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SOUTHALL, MIDDLESEX.—In the celebrated Cowley district.—To Brickmakers, Contractors, Public Companies, Land Societies, Speculators, and Others.—Valuable Freehold Estate and Brickfield, comprising 32 acres, nearly adjoining the station on the Great Western Railway.

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COMPETITION and ARCHITECTURAL DRAWINGS PREPARED, from rough sketches or otherwise. Tracings made and Drawings Copied, &c.—Apply to G. 43, Bedford-row, W.C.

TO PLASTERERS.

W. B. WILKINSON & CO. Prudhoe-street, Newcastle-on-Tyne, require SEVERAL Good, Steady HANDS, including One Good Shop Hand, who can "piece mould" and cast in cement.

PARTNERSHIP WANTED, by an energetic and active man of business, who is able to command from 3,000l. to 4,000l. Is a thorough accountant, and has had ten years' experience in the Timber trade. The severest scrutiny required and invited.—Address, W. G. Post-office, Crickhowell, Brecconshire.

PARTNERSHIP.—WANTED, a PARTNER with a moderate capital, to join the Advertiser in a well-established and profitable Steam-power Manufacturing Business connected with the Building Trade. Principals only treated with.—Address, U 114, Office of "The Builder."

AGENTS REQUIRED.—The Royal Insurance Company is prepared to entertain APPLICATIONS for AGENCY APPOINTMENTS from Gentlemen having command of Fire and Life Business, either in London or the suburbs, or wherever the Company is not fully represented.

The Royal has always been conspicuous for its liberality and promptitude in the settlement of Claims.

Its Annual Income is now over 400,000
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Transfers of Policies from other Companies received without charge for Policy, whatever the amount.—Address,

JOHN B. JOHNSTON, Secretary.

Royal Insurance Company, 29, Lombard-street.

HEXHAM LOCAL BOARD of HEALTH. WANTED, a competent Person, to undertake the Office of SURVEYOR. He will be expected to devote the whole of his time to the duties of the office, and will also be required to have some acquaintance with the working of the Local Government Act.—Applications, stating salary expected, and enclosing references and testimonials, will be received by Mr. ISAAC BATY, Clerk to the Board, until WEDNESDAY, the 1st day of FEBRUARY next, inclusive.

ISAAC BATY, Clerk to the Board.

Hexham, 4th January, 1865.

AN ARCHITECT and QUANTITY and LAND SURVEYOR, whose practice does not now fully occupy his time, would be glad to give OCCASIONAL ASSISTANCE to an Architect or Engineer in Preparing Constructive or Competition Drawings, Specifications, &c. upon moderate terms. The Advertiser is a rapid and correct draughtsman of, and designer in, the Classic and modern Italian styles, and he has had much experience in getting up competition designs. His practical and theoretical knowledge of general, and particularly iron-work construction, enabled him for many years previous to starting in practice, to successfully conduct one of the largest Offices in London; and he has taken out quantities during the last six years for works costing upwards of 600,000l. The Advertiser's abilities are well known in the profession, but references are permitted to some of the most eminent Architects and Engineers.—Address, XERXES, Office of "The Builder."

A VACANCY has occurred in the Office of an Architect and Surveyor, of good practice, in the country, for a JUNIOR ASSISTANT, or IMPROVER; also, for an Intelligent, well-educated Youth, as PUPIL.—Address, Mr. JAMES H. MONEY, Architect, 34, North Brook-street, Newbury.

AN ARCHITECT requires an ASSISTANT, who understands perspective, and has a good knowledge of general office work.—Address, with references, terms, &c. to M. R. A. Office of "The Builder."

TO BUILDERS' CLERKS.

A CLERK REQUIRED, in the Office of a London Builder, accustomed to the duties of measuring-up works, taking out quantities, and making estimates. Considerable experience of accounts is requisite.—Address, stating age, salary, and full particulars, to G. J. Y. Office of "The Builder."

ARTICLED PUPIL WANTED, by a Civil Engineer and Land Surveyor, practising in the North of England. To any intelligent young man, whose abilities adapt him to the profession, a thorough practical knowledge of office and field work may be obtained. Premium moderate.—Apply to JOSHUA T. NAYLOR, Newcastle-upon-Tyne.

B. WHEELER is in immediate want of TWO PLUMBERS and ONE GASFITTER, to fill up vacancies occasioned by three of his old hands having been selected to proceed at once to Bombay, to be employed on the gasworks there. None but first-class workmen need apply.—Albert-street, Nottingham.

QUEENSLAND RAILWAYS.—The following STAFF is required immediately by the Queensland Government, for the Southern and Western Railway, 126 miles in length, of which the first section of 21 miles will be ready for opening on the 1st of June next:—Traffic Manager, Locomotive and Rolling Stock Superintendent, Station Master, Accountant, Two Railway Clerks, Two Head Porters, and Two Signalmen. Applications, enclosing copies of testimonials, and stating salary required, will be received at this Office, on or before the 23th instant. A free passage will be given, and the selected candidates will have to leave for the colony by the end of February.

CHARLES FOX & SON, Agents for the Queensland Government.

8, New-street, Spring-gardens, London, 12th January, 1865.

TO ARCHITECTS AND SURVEYORS.

REQUIRED, a PRACTICAL MAN, for a Permanency, in an establishment in the country. Salary, 100l. A married man preferred.—Apply personally, with testimonials, on SATURDAY, between Two and Five o'clock, at 45a Regent-circus, Piccadilly.

TO ENGINEERS and SURVEYORS.—The Local Board of Health for the district of Leamington are prepared to receive APPLICATIONS from Candidates for the Office of Surveyor.—Printed particulars, stating salary, duties, &c. may be had on application to the Clerk to the Board, and testimonials, accompanying written applications, to be sent in not later than the 6th FEBRUARY, 1865.

R. A. WALLINGTON (Solicitor), Clerk.

Town Hall, Leamington, 17th January, 1865.

WANTED, THIRTY PLASTERERS and TEN PLASTERERS' LABOURERS. Plasterers 4s. 6d. per day, and Labourers 2s. 10d. per day, to work the usual hours of the trade. Nine months' work certain.—Apply to CALL & PETHICK, Contractors, Morley Building Yard, Plymouth.

WANTED, an experienced Person, who has a thorough knowledge of Builder's work in all its branches. He must have been accustomed to make estimates, measure up work, and keep books. State age and salary required. Good reference indispensable.—Address, A. V. Office of "The Builder."

WANTED, in a House Decorator's and Upholsterer's Business, a very experienced SALESMAN, who understands making up accounts, and measuring painter's work. Also a BOOKKEEPER and CLERK WANTED, and a LAD about 16. Apply personally to Mr. OWEN, 249, Oxford-street, W.

WANTED, a steady active Man, about 30 years of age, as WORKING FOREMAN to a Brick and Lime Manufacturer. Must thoroughly understand the management of men, &c.—Apply by letter only, stating salary required, and full particulars, to EDMUND LEE, Loampit-hill, Lewisham, S.E.

WANTED, by an Architect and Surveyor in the City, a JUNIOR ASSISTANT, and also an ARTICLED PUPIL.—Address, A. B. care of Messrs. HARDS & VAUGHAN, No. 2, Abchurch-yard, Cannon-street.

TO CARPENTERS AND JOINERS.

WANTED, a FOREMAN, competent to make Estimates, and to take the Entire Charge, on behalf of the Widow, of the Works of a Builder, lately deceased, who carried on business on a small scale in the Suburbs of London.—Applicants must give some account of their age, and where they have been chiefly employed. References as to character will be required.—Apply by letter only to A. B. Z. care of Messrs. Phillips, Bishop's-court, Lincoln's-inn.

TO BUILDERS' CLERKS.

WANTED, in the Office of a Builder and Contractor, in a provincial town, an efficient and experienced person, of unexceptionable character, to undertake the entire duties of the Office as BOOKKEEPER and GENERAL ACCOUNTANT. He must have filled a similar SITUATION in a first-class firm, and produce satisfactory testimonials.—Address, stating salary required, A. D. Office of "The Builder."

TO GRAINERS AND DECORATIVE PAINTERS.

WANTED, in a first-class Decorating Concern, in Nottingham, a steady, active, and thoroughly proficient person, as GRAINER and DECORATIVE PAINTER (or Artist), one who understands fully design and colour. As the situation will be permanent none but those well qualified need make application. Reference required.—Address, stating salary, to Messrs. SPARROW & SON, Decorative Artists, Painters, Gilders, and General Decorators, Importers and Manufacturers of Paperhangings, Parkrow, Nottingham.—Established 1765.

TO PAPERHANGERS.

WANTED, in a first-class Decorating Business in the Midland Counties, a clever, steady, and active WORKMAN, to fill the Situation of PLAIN and DECORATIVE PAPERHANGER. One who does not object to occasionally fill up his time with Painting. Situation permanent. References required.—Apply to Messrs. SPARROW & SON, Nottingham. Established 1765.

WANTED, a good PLUMBER. Constant employment given.—Apply at 4, Wood-street, Westminster.

TO SMITHS.

WANTED, a good GENERAL HAND, used to Builders' and other IRONWORK. None need apply unless thoroughly good Workmen.—Apply by letter, to C. W. Post-office, Stroud.

WANTED, in an Architect's Office, an ASSISTANT having a thorough knowledge of Gothic Architecture, well versed in construction and the general routine of a London office, also able to prepare perspective drawings in pen and ink etching.—Address, with references and salary required, to ARCHITECT, care of Mr. Pilcher, Bookseller, 144, Gray's-inn-road, London, W.C.

WANTED, in an Architect's Office, in London, a LAD, of about 14 or 15 years of age, able to write a clear and legible hand, to trace drawings, and make himself generally useful. Salary to commence at 5s. per week.—Address, in own handwriting, with references, to ARCHITECT, care of Mr. Pilcher, News Agent, 144, Gray's-inn-road, W.C.

WANTED, a Practical PLUMBER and ZINC-WORKER, well up in closet and pump work.—Address, stating age, salary, references, and where last employed, to Messrs. REAVELL & SONS, Contractors, Windsor.

WANTED, for a Permanency, an experienced CARPENTER and JOINER, an active, quick, thorough workman, capable of managing a job if required. Situation being one of trust, undeniable references as to moral character required. A member of a Christian Church preferred.—Address, A. B 111, Fleet-street, E.C.

WANTED, by a Contractor and Builder, an active LAD, or YOUNG MAN, upon some works, near London, to keep the day accounts and other entries.—Address, W. M. Office of "The Builder."

MOSAIC AND ENCAUSTIC TILE FIXERS.

WANTED, first-class HANDS.—Apply to W. B. SIMPSON & SONS, Agents for Maw & Co.'s Tiles, 436, West Strand, London.

TO BUILDERS' CLERKS.

WANTED, by a London Firm, a CLERK to keep the Day-work Accounts. He must write a very good and rapid hand, and have been accustomed to a builder's or surveyor's office.—Address, L. M. N. Office of "The Builder."

TO BUILDERS' FOREMEN.

WANTED, by a London Firm, a FOREMAN, thoroughly acquainted with the various branches of the building trade, accustomed to measure joiners' work, and book up materials.—Address, E. F. M. Office of "The Builder."

TO CLERKS OF WORKS.

WANTED, an Experienced CLERK of WORKS, who has been used to church restorations.—Apply by letter, with copies of testimonials, to Mr. F. ROGERS, 51, Russell-square, W.C.

WANTED, upon a Nobleman's Estate, TWO Good CARPENTERS, married, capable of doing all kinds of estate work, with good character for sobriety and good conduct. To state age and where last employed, also wages required, &c. For further particulars address, Mr. METCALFE, Dell Farm, Latimer, Chesham, Bucks.

WANTED, a steady and industrious Man, to SUPERINTEND and ASSIST in the WORKING of a small SAW-MILL and STEAM ENGINE. Must understand saw-sharpening and the preparation of joiners' work by machinery. Good references indispensable.—Address, stating age and salary required, T. G. Office of "The Builder."

TO MASTER PLUMBERS.

WANTED, by a respectable Young Man, a SITUATION as an IMPROVER. Has been five years at the trade.—Address, W. H. 22, Weymouth-street, Portland-place, W.

WANTED, a SITUATION, by a first-class STAIRCASE HAND, either by day or piece work; or as Working Foreman; either in town or country. First-class reference, if required.—Address, W. B. No. 5, St. Thomas-place, Middle-row, Goswell-street, City, E.C.

TO BUILDERS AND OTHERS.

WANTED, PIECEWORK, in CARPENTER and JOINER'S WORK. Any quantity. Town or country.—Address, THOMAS KNIGHT, 5, New Norfolk-street, New North-road, Islington, N.

TO PLUMBERS AND OTHERS.

WANTED, a SITUATION, as PLUMBER, GASFITTER, and GLAZIER.—Address, H. K. L. 10, Smith-street, Marlborough-road, Brompton, Chelsea, London.

TO BUILDERS AND OTHERS.

WANTED, by a thoroughly practical and energetic Man, a SITUATION as CLERK of WORKS, or GENERAL FOREMAN to a Builder. Good reference.—Address, J. A. D. Office of "The Builder."

TO BRICKMAKERS AND BUILDERS.

WANTED, by an experienced Man, a RE-ENGAGEMENT as BRICKFIELD FOREMAN. Can set the bricks if required. Good references.—Address, X. Y. Post-office, Lee-green, Kent, S.E.

TO ARCHITECTS AND SURVEYORS.

WANTED, by an experienced ASSISTANT, an ENGAGEMENT with the above. He is fully competent to prepare working, detail, and competition drawings, and is quick at quantities. Good references, &c.—Address, ALPHA, care of Mr. SAGE, 11, Victoria Grove, South Kensington.

WANTED, by a good Surveyor, Leveller, and Draughtsman, an ENGAGEMENT. Would be happy to render occasional assistance.—Address, J. M. Great Luxembourg Railway, 156, Gresham-house, City, E.C.

WANTED, by a Builder's Son, aged 21, a SITUATION as an IMPROVER to the JOINERY WORK.—Address, A. B. Elm Grove Cottage, Barnes, Surrey.

WANTED, a SITUATION, as a General and Decorative DRAUGHTSMAN.—Address, S. OKE, 13, Cambridge-terrace, Cornwall-road, Notting-hill.

TO TIMBER MERCHANTS AND OTHERS.

WANTED, by the Advertiser, a SITUATION as SALESMAN or CLERK. Has had three years and a half experience in a timber-yard. Can give unexceptionable references.—Address, Y. W. 19, Down-street, Piccadilly, W.

TO BUILDERS AND CONTRACTORS.

WANTED, by a GENERAL FOREMAN, a RE-ENGAGEMENT. No objection to Town or country. Good references.—Address, STEEL, Office of "The Builder."

WANTED, by a Young Man, a SITUATION as GRAINER and HOUSE PAINTER. Is willing to make himself generally useful.—Address, W. F. 32, Salisbury-street, Portman-market, St. Marylebone.